INNSPUB

International Journal of Biosciences | IJB |
ISSN: 2220-6655 (Print), 2222-5234 (Online)
http://www.innspub.net
Vol. 22, No. 1, p. 35-44, 2023

RESEARCH PAPER OPEN ACCESS

Knowledge, Attitude and Practices of African Swine Fever (ASF) Affected Communities in the Ytawes District of Cagayan Valley, Philippines: Basis for Extension Program

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Key words: Demographic, Socio-economic, African swine fever, Bio-security, Outbreak

http://dx.doi.org/10.12692/ijb/22.1.35-44 Article published on January 02, 2023

Abstract

The communicable African Swine Fever (ASF) has adversely crippled the country's swine industry in the last few years and subsequently hampered the growth of the agriculture sector. This study utilized the descriptive research design. The study was conducted at the three municipalities in the Ytawes district of Piat, Sto. Nino and Tuao from May-June 2022. Results of the study show that women were more predominantly engaged in pig farming than male aside from their roles as a mother. Also, raisers prefer to bury the infected animals without reporting them to authorities is alarming due to the possible spreading of the diseases and authorities hardly contained it. Raisers must be encouraged to disinfect the production area before re-stocking to avoid possible problems. The farmers should practice not allowing people in and out of the production area because they might be the carrier of such diseases since most of the farm owners do not have bio-security measures. There should be close coordination with the Municipal Agriculturist Office to seek the opinion of veterinarians/technicians for the possible solutions to such problems. Since the majority of the respondents considered pig farming as one of their sources of income. Attending training's/seminars could help the pig raisers to gain more knowledge on the proper handling of such diseases as ASF.

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Introduction

African Swine Fever (ASF) is a highly contagious and fatal disease of domestic pigs. It most commonly appears in the acute form of hemorrhagic fever. Sub-acute and chronic forms of the disease also exist. Mortality is usually close to 100 percent and pigs of all ages are affected. The African Swine Fever (ASF) was first reported in the Philippines in July 2019, starting with seven outbreaks in the province of Rizal, Region IV-A, adjacent to Metro Manila (National Capital Region) in the Philippines. As of 21st September 2020, ASF had been reported in 31 provinces across eight regions. A further nine (9) provinces where ASF was not reported by the 21st of September 2020 were classified as buffer, surveillance, or protected zones. The outbreak of ASF resulted in a 9.8% drop in pig production in the last quarter of 2019. The government of the Philippines continued to collect quantitative data throughout the outbreak for both larger-scale commercial holdings and smaller farms. What has been less well understood are the broader impacts of ASF on tangible and intangible, qualitative aspects of livelihoods, both within farming households and the broader value chains. There has been expressed need by governments and international non-government organizations for this sort of information across Southeast Asia and the Pacific.

The effects of African swine fever are already appearing as losses in the Philippines' farms. As the disease spread throughout the Philippines from 2019 to 2021, the area lost nearly $20 million a month. Both pork and chicken are the top consumed meats, but pork is the top consumed meat in the country. In 2020, the average Philippines citizen ate 14.9 kilograms of pork compared to 13.74 kilograms of chicken. Many Filipino dishes use pork as the primary protein. According to the University of the Philippines's Department of Economics and Management, backyard raisers are defined as farms with 10-20 pigs and 20-40 piglets while commercial farms are those with anywhere from 21 to 99 pigs. There are many backyard raisers distributed throughout the country without as much government regulation. This has made it more difficult for the government to implement zoning and other strategies to control African swine fever in the Philippines.

The Province of Cagayan has been reported as one of the affected provinces, particularly the Ytawes District where small backyard holdings are the sources for most pork sold in the market. Since CSU-Piat engaged in school and community-based projects among its service areas in the Ytawes district services must be strengthened and sustained. The important updates in agricultural production i.e.poultry and livestock must be properly disseminated among its clientele in order to uplift their socio-economic living conditions. So, the loss of pork hits small farmers most directly. Many people throughout the Philippines raise hogs as small businesses to sell at wet markets. Selling pork raised at one's residence is a popular, profi**table** way for Philippines citizens to make a living. With sick pigs bearing symptoms such as lesions in the spleen, liver and kidneys, the value of the pork decreases, reducing local farmers' income.

Beyond this, one of the hallmarks of the disease is a sudden increase in pig deaths at a given farm. African Swine Fever (ASF) is contagious and has a high level of mortality, making it possible for the disease to wipe out many infected pigs at one time.

The study aimed to assess the profile and practices of Knowledge, Attitude, and Practices of African Swine Fever (ASF) affected communities in the Ytawes district of Cagayan Valley, Philippines: Basis for the extension program.

Methodology

This chapter presents the methodology for the conduct of the study. It includes the research design, respondents of the study, data gathering procedure and statistical tools.

Research design

This study utilized the descriptive research design. The design describes the demographic and socio-economic profile and practices of the respondents

during the ASF outbreak.

Locale of the study

The study was conducted at the three municipalities in the Ytawes district of Piat, Sto. Nino and Tuao from May-June 2022.

Respondents of the Study

The sampling technique to be used in selecting the community resident-respondents will be the enumeration technique.

Data gathering instruments

The main data-gathering tool was the questionnaire. The questionnaire was pre-tested and validated before it was finally administered to the respondents. An interview was likewise conducted to implement the responses given in the questionnaire.

Data gathering procedures

Before the conduct of the study, a permission letter endorsed by the researcher and the Campus Executive Officer was sought from the Office of the Municipal Agriculturist and Barangay Captains of the barangays surveyed where the respondents reside. After the permission was approved, the researchers personally administered the questionnaire to ensure 100% retrieval. The data gathered from this study will be kept confidential.

Data analysis

The frequency and percentage counts will be used to analyze the profile variables and practices of the resident respondents.

Results and discussion

Demographic profile of the respondents

Table 2 shows the demographic profile of the respondents in the Ytawes district who are affected by African Swine Fever (ASF). The result shows that most of the respondents (63 or 25.71%) fall within the age bracket of 40-49 years of age. The youngest respondents fall within the age bracket below 20 years old and the oldest falls between 60-69 years old.

The mean age is 41 and the standard deviation of 24.66reflects that the respondents are mature. In terms of sex, more than half of the respondents are females (124 or 50.61%) while 121 or 49.39% are males.

Table 1. Distribution of Respondents of the Study.

Municipality	Sample (N)
Tuao	173
Piat	18
Sto.Nino	54
TOTAL	245

This means that females or women were more predominantly engaged in taking care of pigs than males aside from their roles as a mother that looked into the welfare of their children and doing household chores. This result is in contrast to the study of Saka *et al.* (2022) where males predominantly active than females in pig farming activity. On social status, most of the respondents are married (192 or 78.37%).

Socio-economic profile of the respondents

Table 3 Shows the socio-economic profile of the respondents, in terms of educational attainment 91 (37.14%) finished secondary education and only 3 (1.22%) did not finish schooling at all. Most of the respondents considered livestock farming as their primary occupation with 128 (52.24%) and only 69 (26.16%) secondary (crop farmer) as their source of income. On the income, raisers or farmers have an income of fewer than ₱ 5,000 pesos monthly. On the other hand, 169, or 68.98% owned land for farming.

This means that this outbreak had made something to quit the business because of unrecoverable loss (*Omowon et al., 2019*).

Table 2. Demographic profile of the respondents affected with African Swine Fever (ASF).

Categories or attributes	Municipality			
	Piat N = 18 (%)	Sto. Niño N = 54 (%)	Tuao N = 173 (%)	Total N = 245 (%)
1. Age				
- <20	0 (0)	0 (0)	1 (0.58)	1 (0.41)
- 20-29	1 (5.56)	2 (3.7)	17 (9.83)	20 (8.16)
- 30-39	6 (6.33)	9 (16.67)	34 (19.65)	49 (20.00)
- 40-49	5 (27.78)	14 (25.93)	44 (25.43	63 (25.71)
- 50-59	3 (16.67)	15 (27.78)	37 (21.39)	55 (22.45)
- 60>	3 (16.67)	14 (25.93)	40 (23.12)	57 (23.27)
2. Sex				
- Male	12 (67.67)	26 (48.15)	83 (47.98)	121 (49.39)
- Female	6 (33.33)	28 (51.85)	90 (52.02)	124 (51.61)
3. Social Status				
- Single	3 (16.67)	11 (20.37)	19 (10.98)	33 (13.47)
- Married	13 (72.33)	39 (72.22)	140 (80.92)	192 (78.37)
- Widowed	2 (11.11)	4 (7.41)	8 (4.63)	14 (5.71)
- Separated	0 (0)	0 (0)	6 (3.47)	6 (2.45)

Table 3. Socio-economic profile of the respondents affected with African Swine Fever (ASF).

Categories of Attributes	MUNICIPALITY			
	Piat N = 18 (%)	Sto. Niño N = 54 (%)	Tuao N = 173 (%)	Total N = 245 (%)
1. Educational Attainment				
- None	0 (0)	3 (5.56)	0 (0)	3 (1.22)
- Primary	4 (22.22)	18 (33.33)	65 (37.57)	87 (35.51)
- Secondary	4 (22.22)	20 (37.04)	67 (38.73)	91(37.14)
- Tertiary	8 (44.44)	12 (22.22)	35 (20.23)	55 (22.45)
- Vocational Education	2 (11.11)	1 (1.85)	6 (3.47)	9 (3.67)
2. Primary Occupation				
- Crop and livestock farming	3 (16.67)	8 (14.81)	7 (4.05)	18 (7.35)
- Crop Farming	3 (16.67)	21 (38.89)	45 (26.01)	69(26.16)
- Civil Servant	2 (11.11)	5 (9.26)	11 (6.36)	18 (7.35)
- Livestock raiser	7 (38.87)	18 (33.33)	103 (59.54)	128 (52.24)
- Business	3 (16.67)	2 (3.7)	7 (4.05)	12 (4.90)
3. Monthly Income				
<5,000	5 (27.78)	48 (88.89)	131 (75.72)	184 (75.10)
5,000-10,000	10 (55.56)	5 (9.26)	34 (19.65)	49 (20.00)
10,000-20,000	3 (16.67)	1 (1.85)	5 (2.89)	9 (3.67)
20,000-30,000	0 (0)	0 (0)	1(0.58)	1 (0.45)
30,000-40,000	0 (0)	0 (0)	0 (0)	0 (0)
40,000-50,000	0 (0)	0 (0)	0 (0)	0 (0)
>50,000	0 (0)	0 (0)	2 (1.16)	2 (0.82)

Farm characteristic

Table 4 shows the farm characteristics of the respondents in the Ytawes district who are affected by African Swine Fever (ASF). Results show that 59.59% used weanling production, followed by fattening with 36.33%, and only 4.08% used breed to finish as their production practice. As regards house classification, 53.06% of the respondents used farrowing pen, followed by a grow-out pen by 31.02%, and none of the respondents used a holding pen as their house classification. On the farm established (in years), 64.90% of the respondents have had their farm for less than ten (10) years. Moreover, in the number of pigs in the piggery, 49.80% had less than five (5) heads, followed by 6-10 heads with 31.43%, and only 5.71% had 51 to100 heads pigs in their piggery, respectively. As to the farming practices, most of the respondents (97.55%) used none mixed farming practices which compared to mixed farming practices by 2.45% only. As to the number of farm workers, 98.78% of the respondents said that they had only 1-2 family members working on their farm, and only 1.22% had 6-10 members. In terms of feeding the animals, 79. 59% of the respondents fed their hogs three times a day and only 19.59% twice a day.

As regards swine monitoring, the results show that 93.88% monitor their swine more than twice a day. Furthermore, the types of domesticated pigs on the farm, 43. 27% of the respondents had landrace while 15.51% had large white and only 15.10% had a boar as their domesticated pig on the farm.

Table 4. Farm characteristics of the respondents affected with ASF in the Ytawes District.

Categories or Attributes	MUNICIPALITY			
	Piat N = 18 (%)	Sto. Niño N = 54 (%)	Tuao N = 173 (%)	Total N = 245 (%)
1. Production Practice				
- Breed to Finish	4 (22.22)	1 (1.85)	5 (2.89)	10 (4.08)
- Fattening	4 (22.22)	14 (25.93)	71 (41.04)	89 (36.33)
- Weanling Production	10 (55.56)	39 (72.22)	97 (56.07	146 (59.59)
2. House Classification				
- Farrowing Pen	12 (66.67)	34 (62.96)	84 (48.55)	130 (53.06)
- Grow-out Pen	0 (0)	16 (29.63)	60 (34.68)	76 (31.02)
- Finishing Pen	1 (5.56)	4 (7.41)	12 (6.94)	17 (6.94)
- Breeding Pen	5 (27.78)	0 (0)	17 (9.83)	22 (8.98)
- Holding Pen	0 (0)	0 (0)	0 (0)	0 (0)
3. Farm Established (in Years)				
- <10	13 (72.22)	40 (74.07)	106 (61.27)	159 (64.90)
- 10-20 Years	3 (16.67)	10 (18.52	50 (28.90)	63 (25.71)
- >20	2 (11.11)	4 (7.41)	17 (9.83)	23 (9.39)
4. Number of Pigs in the Piggery				
- <5 Heads	0 (0)	35 (64.81)	87 (50.29)	122 (49.80)
- 6-10 Heads	11 (61.11)	17 (31.48)	4928.32)	77 (31.43)
- 11-50 Heads	7 (38.89)	1 (1.85)	24 (13.87)	32 (13.06)
- 51 to >100 Heads	0 (0)	1 (1.85)	13 (7.51)	14 (5.71)
5. Type of Farming Practices				
- None Mix Farming	17 (94.44)	54 (100)	168 (97.11	239 (97.55)
- Mix Farming Practiced	1 (5.56)	0 (0)	5 (2.89)	6 (2.45)
6. Farm Workers Number				
- 1-2 members	18 (100)	54 (100)	170 (98.27)	242 (98.78)
- 3-5 members	0 (0)	0 (0)	3 (1.93)	3 (1.22)
- 6-10 members	0(0)	0 (0)	0 (0)	0 (0)
- >10 members	0 (0)	0 (0)	0 (0)	0 (0)
7. Hog Feeding				
- Once a day	0 (0)	0 (0)	0 (0)	0 (0)
- Twice a day	3 (16.67)	12 (22.22)	33 (19.08)	48 (19.59)

- Three times a day	15 (83.33)	41 (75.93)	139 (80.35)	195 (79.59)
- Others	0 (0)	1 (1.85)	1 (0.58)	2 (0.82)
8. Swine Monitoring				
- Once a day	0 (0)	0 (0)	2 (1.16)	2 (0.81)
- Twice a day	1 (5.56)	3 (5.56)	9 (5.20)	13 (5.31)
- More than Twice a day	17 (94.44)	51 (94.44)	162 (93.64)	230 (93.88)
9. Domesticated Pigs in the Farm				
- Landrace	3 (16.67)	5 (9.26)	98 (56.65)	106 (43.27)
- Pietrains	1 (5.56)	0 (0)	1 (0.58)	2 (0.82)
- Native	1 (5.56)	24 (44.44)	2 (1.16)	27 (11.02)
- Large white	11 (61.11)	9 (16.6)	18 (10.40)	38 (15.51))
- Duroc Jersey	2 (11.11)	3 (5.56)	18 (10.40)	23 (9.39)
- Boar	0 (0)	1 (1.85)	36 (20.81)	37 (15.10)
- Hypor	0 (0)	12 (22.22)	0 (0)	12 (4.90)

Awareness of African swine fever

Table 5 shows African Swine Fever (ASF) awareness the respondents are aware of the occurrence of the disease with 97.14% and only 2.86% are not aware. In terms of ASF outbreaks in the country or provinces, 97.55% of them are aware of the outbreaks only 2.45% are not aware. The respondents also indicate that 60.82% are aware of the causes of the spreading of African Swine Fever (ASF), while not aware is only 39.18%.

Table 5. Level of awareness of the respondents on the practices of ASF affected communities.

Categories or Attributes	MUNICIPALITY			
	Piat N = 18 (%)	Sto. Niño N = 54 (%)	Tuao N = 173 (%)	Total N = 245 (%)
1. Have you ever heard African Swine Fever?				
Yes	18 (100)	53 (98.15)	167 (96.53)	238 (97.14)
No	0 (0)	1 (1.85)	6 (3.47)	7 (2.86)
2. Have you heard the outbreaks of ASF in other countries or provinces?				
Yes	18 (100)	51 (94.44)	170 (98.27)	239 (97.55)
No	0 (0)	3 (3.70)	3 (0.58)	6 (2.45
3. Are you aware on the ways of spread of ASF?				
Yes	12 (66.67)	28 (51.85)	109 (63.00)	149 (60.82)
No	6(33.33)	26 (48.15)	64 (37.00)	96 (39.18)
4. Do you know the clinical signs of ASF?				
Yes	6 (33.33)	30 (55.56)	63 (36.42)	99 (40.41)
No	12 (66.67)	24 (44.44)	110 (63.58)	146 (59.59)
5. When African Swine Fever (ASF) signs was present, the animals will be observed if it will improve or worse				
Yes	12 (66.67)	24 (44.44)	19 (10.98)	55 (22.45)
No	6 (33.33)	30 (55.56)	154 (89.02)	190 (77.55)
6. When African Swine Fever (ASF) signs was observed, it will treated the affected pigs with antibiotic				
Yes	12 (66.67)	10 (18.52)	8 (4.62)	24 (9.80)
No	6 (33.33)	44 (81.48)	165 (95.38)	221 (90.20)
7.When African Swine Fever (ASF) signs was observed, I immediately seek an opinion from veterinarian				
Yes	9 (50.0)	18 (33.33)	13 (7.51)	40 (16.33)
No	9 (50.0)	36 (66.67)	160 (92.49)	205 (83.67)
8. When African Swine Fever (ASF) signs was observed, I waited for few days and suspect ASF if the pigs do not improve or their condition get worse				
Yes	8 (44.44)	16 (29.63)	9 (5.20)	33 (13.47)
No	10 (55.56)	38 (70.37)	164 (94.8)	212 (86.53)
9. When observed, I suspected that ASF is in the farm				
Yes	3 (16.67)	22 (40.74)	21 (12.14)	46 (18.78)
No	15 (83.33)	32 (59.26)	152 (87.86)	199 (81.22)

10. If, African Swine Fever (ASF) do not suspected in the farm concerned other diseases than African Swine Fever (ASF)				
Yes	14 (77.78)	31 (57.41)	65 (37.57)	110 (44.90)
No	4 (22.22)	23 (42.59)	108 (62.43)	135 (55.10)
11.There is low probability of African Swine Fever (ASF) outbreak				
Yes	13 (72.22)	8 (14.81)	69 (39.88)	90 (36.73)
No	5 (27.78)	46 (85.19)	104 (60.12)	155 (63.27)
12.I rarely hear about African Swine Fever (ASF) from other farmers or veterinarians				
Yes	13 (72.22)	9 (16.67)	72 (41.62)	94 (38.37)
No	5 (27.78)	45 (83.33)	101 (58.38)	151 (61.63)
13. rarely hear about African Swine Fever (ASF) through media or journals				
Yes	12 (66.67)	12 (22.22)	60 (34.68)	84 (34.29)
No	6 (33.33)	42 (77.78)	113 (65.32)	161 (65.71)

The clinical signs, only 40.41% of the respondents are aware of the clinical signs compared to not aware having 59.59%. As to signs of ASF, the respondents observed the animal first if there was an improvement or none (22.45%) while only 77.55% will not see the animals the effects of ASF. On antibiotic treatment, 9.80% of the respondents treated the affected pigs with antibiotics while 90.20% do not treat their animals with antibiotics. On the other hand, they seek immediate technical assistance from a veterinarian with 16.33% of the respondents and 83.67% not. Results further show that 13.47% waited for several days to have an immediate suspect for the outbreak of the problem while 86.53% of them do not. Furthermore, when animals become worse it is suspected that ASF occurs on the farm by 18.78% of the client while 81.22% do not. The respondents do not suspect African Swine Fever (ASF) exists on the farm rather than concerned diseases with 44.90% do not have concerns at all with 55.10%. Aside from that, 36.73% of them also rated low profitability due to the ASF outbreak, and 63.27% were not concluded. Also, 38.37% of the respondents rarely hear about ASF from farmers or veterinarians and 61.63% of them do not hear any about the disease. Moreover, regarding information dissemination, 34.29% rarely hear about the disease through magazines or journals and 65.71% heard it.

Table 6. ASF Reporting of the respondents on the practices of ASF affected communities.

Categories or Attributes	MUNICIPALITY			
	Piat N = 18 (%)	Sto. Niño N = 54 (%)	Tuao N = 173 (%)	Total N = 245 (%)
1. African Swine Fever (ASF) reported to the Authority/Veterinarian				
Yes	9 (50)	50 (92.59)	120 (69.36)	179 (73.06)
No	9 (50)	4 (7.41)	53 (30.64)	66 (26.94)
2. Reported after several days to avoid false report				
Yes	11 (61.11)	44 (81.48)	21 (12.14)	76 (31.02)
No	7 (38.89)	10 (18.52)	152 (87.86)	169 (68.98)
3. Reported after several days due to financial costs				
Yes	6 (33.33)	41 (75.93)	25 (14.45)	72 (29.39)
No	126 (66.67)	13 (24.07)	148 (85.55)	173 (70.61)
4. thought of the report was useful				
Yes	11 (61.11)	50 (92.59)	124 (71.68)	185 (75.51)
No as to	7 (38.89)	4 (7.41)	49 (28.32)	24.49)
5. felt ashamed or guilty due to negative image in the farm				
Yes	9 (50)	18 (33.33)	60 (34.68)	87 (35.51)
No	9 (50)	36 (66.67)	113(65.32)	158 (64.49)
6. had negative relationship with other farmers or veterinarian				
Yes	9 (50)	21 (38.89)	62 (35.84)	92 (37.55)
No	9 (50)	33 (61.11)	111(64.16)	153 (62.45)
7. had negative financial consequences				

Yes	6 (33.33)	19 (35.19)	53 (30.64)	78 (31.84)
No	12 (66.67)	35 (64.81)	120 (69.36)	167 (68.16)
8. pigs will be buried with no refund from the Government				
Yes	9 (50)	5 (9.26)	13 (7.51)	27 (11.02)
No	9 (50)	49 (90.74)	160 (92.49)	218 (88.98)
9. Immediately sell any suspected animal to recover funds				
Yes	5 (27.78)	5 (9.26)	8 (4.62)	18 (7.35)
No	13 (72.22)	49 (90.74)	165 (95.38)	227 (92.65)
10. Farm will be closed down				
Yes	4 (22.22)	3 (5.56)	14 (8.09)	21 (8.57)
No	14 (77.78)	51 (94.44)	159 (91.91)	224 (91.53)

African swine fever reporting

Table 6 shows the ASF reporting strategy of the respondents where 73.06% reported it in the authority or veterinarian the case while only 26.94% did not report it. As to the respondents who waited for several days to avoid false reports 29.39% did 70.61% of them did not report. Results also show that reporting after several days due to financial costs by 29.39% as compared to not reporting after several days by 70.61%. On the thought that reporting is beneficial, 75.51% while 24.49% said it is not. However, on they felt ashamed or guilty due to the negative image of the farm only 35.51%lesser to 64.49 percent responded that they did not feel any guilt. As to the negative relationship with other farmers or veterinarians 37.55% and 62.45% of them have no negative relationship. Furthermore, 31.84% believed that reporting to the authority the occurrence of ASF had harmful effects on the financial consequences and 68.16% of them did not. The practice of not reporting the cases and preferring to bury them without a refund from the government is only 11.02% while 88.98% do not bury them and wait for the authority to document it for a refund. Moreover, 7.35% of the respondents immediately sell any suspected animal to recover funds while 92.65%of do not. In terms of the closing of the farm when there is an outbreak 8.57 while 91.43% did not believe it.

Table 7. Bio-security measures of the respondents on the practices of ASF affected communities.

Categories or Attributes	MUNICIPALITY			
	Piat N = 18 (%)	Sto. Niño N = 54 (%)	Tuao N = 173 (%)	Total N = 245 (%)
1. Foot Disinfectant				
Foot Bath in the farm	1 (5.56)	1 (1.85)	1 (0.58)	3 (1.22)
None foot bath in the farm	17 (94.44)	53 (98.15)	172 (99.42)	242 (98.78)
2. Farm Isolation				
Quarantine Area in the farm	1 (5.56)	1 (1.85)	6 (3.47)	8 (3.27)
None Quarantine Area in the Farm	17 (94.44)	53 (98.15)	167 (96.53)	237 (96.73
3. Selling of pigs to Butchers				
Farm entering	18 (100)	52 (96.30)	160 (92.49)	230 (93.33)
Quarantine area selling	0 (0)	0 (0)	13 (1.73)	3 (1.22)
Others	0 (0)	2 (3.70)	10 (5.78)	12 (4.90)
4. Farm Visiting				
Only to buy piglets	13 (72.22)	9 (16.67)	57 (32.95)	79 (32.24)
All the time	0 (0)	0 (0)	1 (0.58)	1 (0.41)
Sometimes	3 (16.67)	8 (14.81)	19 (10.98)	30 (12.24)
Never	2 (11.11)	37 (68.52)	96 (55.49)	135 (55.10)
5. Things done in the farm				
5.1 Calling a veterinarian				
- Veterinarian calling during urgent issues	12 (66.67)	48 (88.89)	149 (86.13)	209 (85.31)
- None veterinarian calling	6 (33.33)	6 (11.11)	24 (13.87)	36 (14.69)

during urgent issues				
5.2 Drug administration				
- Had drugs and the veterinarian to administer the treatments	7 (38.89)	4 (7.41)	99 (57.23)	110 (44.90)
- None Veterinary to Administer the treatments	11 (61.11)	50 (92.59)	74 (42.77)	135 (55.10)
5.3 Treating sickly animals				
- Self-treatments	1 (5.56)	5 (9.26)	14 (8.09)	20 (8.16)
- None Self-treatments	17 (94.44)	49 (90.74)	159 (91.91)	225 (91.84)
5.4 Using syringe				
- Animal treatments of the same syringe being sed	1 (5.56)	0 (0)	1 (0.58)	2 (0.82)
- None animal treatments of the same syringe being used	17 (94.44)	54 (100)	172 (99.42)	243 (99.18)
5.5 Disinfection strategy				
- Farm disinfection	9 (50.00)	52 (96.30)	163 (94.22)	224 (91.43)
- None farm disinfection	9 (50.00)	2 (3.70)	10 (5.78)	21 (8.57)
6. African Swine Fever (ASF) reaction on the outbreak				
- <10%	0 (0)	1 (1.85)	3 (1.73)	4 (1.63)
- <50%	2 (11.11)	23 (42.59)	130 (75.14)	155 (63.27)
- 60-80%	5 (27.77)	5 (9.26)	13 (7.51)	23 (9.39)
- 89-90%	10 (55.56)	24 (44.44)	12 (6.94)	46 (6.94)
- 100%	1 (5.56)	1 (1.85)	15 (8.67)	17 (6.94

Bio-security measures

Table 7 shows the farm biosecurity, respondents who had a foot bath disinfectant on the farm were 1.22% compared to those who do not have 98.78%. On-farm isolation, results show that 3.27% had quarantine areas in the farm while 96.23% doesn't have. On selling the pigs to butchers, 93.88% of the respondents will allow the butchers to enter the vicinity of the farm and only 1.22% had a quarantine area selling. Furthermore, 55.10% said they never allow farm visiting, and 32. 24% said only the buyers of piglets are allowed to enter the vicinity. On the things done on the farm, 85.31% of the respondents stated that they will call a veterinarian during urgent while 14.69% do not call it.

In terms of drug administration to treat the animals, 44.90% will call a veterinarian only 55.10% will no longer need a veterinarian. In treating the animals suspected of other diseases or symptoms, 8.16% of the respondents said that they practiced self-treatment lower than those who don't have self-treatments 91.84%. The results also show that 99.82%, they will not allow using the same syringe during vaccination only 0.82% are using the same. Moreover, on the farm disinfection, 91.43% of the respondents do farm disinfection while only 8.57% do not. On the African swine fever reaction, less than 50 is the highest which is 63.27% while less than ten (10) is the lowest is 1.63%. The role of quarantine in any livestock farm is expected to be taken seriously more so in stocking and restocking activities at post-outbreak of any disease (*Omowon et al., 2019*).

The presence of bio-security is considered critical to the prevention of another ASF and other infectious disease outbreaks (FAO, 2000; FAO, 2010; and Fashina *et al.*, 2010).

Conclusions

Based on the above findings, the farmers should practice not allowing people in and out of the production area because they might be the carrier of such diseases since most farm owners do not have bio-security measures. There should be close coordination with the Municipal Agriculturist Office to seek the opinion of veterinarians/technicians for the possible solutions to such problems. Since the majority of the respondents considered pig farming as one of their sources of income. Attending training's/seminars could help the pig raisers to gain more knowledge on the proper handling of such diseases as ASF. According to Babalobi *et al.* (2007), swine raisers should consider the importance of isolation pens thereby enhancing the ease of disease transmission.

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