

STUDY OF THE IMPLEMENTATION OF HEALTH MANAGEMENT FOR PIG BREEDING IN CV ROKU, MANGGARAI, NUSA TENGGARA TIMUR

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Abstract

The application of health management is a determining factor for the success of a pig farm business. This research was conducted to observe the pig health management in CV. Roku, Manggarai, NTT. The data used in this research was secondary data, reconfirmed to the owner using the direct interview method using questionnaires, and then analyzed descriptively. The practice of health management studied was the application of medication, biosecurity, and vaccination to gilts, sows, and piglets. The results of the study showed that the treatment of gilts reared on the farm was in the form of giving antibiotics, vitamins, and anthelmintics; medical measures performed on sows after giving birth in the form of giving antibiotics, vitamins, and anti-inflammatories while medical measures for sows after weaning are in the form of vitamins and antibiotics; as well as medical measures for piglets reared in the farm in the form of iron (Fe), vitamins, and antibiotics. The results of this study could be concluded that CV. Roku has not properly implemented pig health management, as evidenced by CV. Roku only applies medication but didn't apply biosecurity and vaccination at all to gilts, sows, and piglets in health management.

Keywords: health management, implementation, pig breeding

KAJIAN IMPLEMENTASI MANAJEMEN KESEHATAN PETERNAKAN BABI DI CV ROKU, MANGGARAI, NUSA TENGGARA TIMUR

Abstrak

Penerapan manajemen kesehatan merupakan salah satu faktor penentu keberhasilan usaha peternakan babi. Penelitian ini dilakukan untuk mengetahui manajemen kesehatan babi di CV. Roku, Manggarai, NTT. Data yang digunakan dalam penelitian ini adalah data sekunder, dikonfirmasi kembali kepada pemilik dengan menggunakan metode wawancara langsung dengan menggunakan kuesioner, kemudian dianalisis secara deskriptif. Praktik manajemen kesehatan yang diteliti adalah penerapan pengobatan, biosekuriti, dan vaksinasi pada dara, induk, dan anak babi. Hasil penelitian menunjukkan bahwa perlakuan terhadap babi dara yang dipelihara di peternakan berupa pemberian antibiotik, vitamin, dan obat cacing, tindakan medis yang dilakukan pada induk babi setelah melahirkan berupa pemberian antibiotik, vitamin, dan obat antiradang, sedangkan tindakan medis pada induk babi setelah sapih berupa vitamin dan antibiotik, dan upaya pengobatan terhadap anak babi yang dipelihara di peternakan berupa pemberian zat besi (Fe), vitamin, dan antibiotik. Hasil penelitian ini dapat disimpulkan bahwa CV. Roku belum menerapkan manajemen kesehatan babi dengan baik, terbukti dari CV. Roku hanya menerapkan pengobatan tetapi tidak menerapkan biosekuriti dan vaksinasi sama sekali pada dara, induk, dan anak babi dalam pengelolaan kesehatan.

Kata Kunci: manajemen kesehatan, implementasi, peternakan babi

INTRODUCTION

Pigs are a popular livestock choice for farming households in East Nusa Tenggara, as they offer high business potential and economic viability (Ballo & Lalus, 2021). Pig are known for their high production, fast growth, and adaptability to various feeds (Alionye, et al., 2020). Piggeries have been reported to increase farmers' income and

contribute to poverty alleviation (Matialo et al., 2020).

However, pigs farming in East Nusa Tenggara, especially Manggarai Regency, faces many health problems, primarily related to infectious and non-infectious diseases (Rahayu, 2014). These diseases, caused by viruses, bacteria, parasites, and fungi (Suratma et al., 2016), are exacerbated by conventional

rearing systems with poor health management practices (Bulu et al., 2019). Pig breeders must be able to improve health management, because they play an important role in disease control (Rajesh et al., 2019). However, those farmers often lack knowledge about effective health management (Dione et al., 2014), which leads to a decline in pigs product quality and productivity, and pose major socioeconomic consequences for the farmers (Beltran-Alcrudo et al., 2019).

To address these challenges, the research focused on understanding how pig farmer in Manggarai, implements health management practices, considering aspects such as disease prevention, vaccination, medication, and vitamin supplementation (Sapanca et al., 2015). Improving pig health management is a key factor in increasing pig production, as researches have shown a direct correlation between health status and overall productivity (Racewicz et al., 2021; Rodrigues da Costa et al., 2020). This research was conducted at CV. Roku, the first commercial swine breeding farm in Manggarai, East Nusa Tenggara, to provide broader understanding of health management practices in pig farming, such as medication, biosecurity, and vaccination, and to serve as a reference for the farm to improve its health management strategies.

MATERIALS AND METHODS

This research was conducted at CV Roku's pig farm in Benteng Suru, Ruteng District, Manggarai Regency. This research was conducted during one production cycle, or 4 months (starting from December 2022 to April 2023). This study used pigs from

different production period and various ages. This study used gilts aged 3, 5, and 7 months (6, 3, and 5 gilts, respectively), sows aged 2, 3, 5, and 7 years old (5, 4, 7, and 3 sows, respectively), and piglets aged 3, 14, and 45 days (85, 72, and 72 piglets, respectively). The piglets were born from 12 sows, consisting of 70 piglets aged 1 days old from sows aged 2 years old; 85 piglets aged 3 days old from sows aged 3 years old; 72 piglets aged 14 days old from sows aged 3 years old, and 67 piglets aged 35 days old from sows aged 5 years old.

This study used secondary data on health management practices, including medication, biosecurity, and vaccination. Direct interviews with breeders were conducted to confirm the implementation of health management practices. The standard health management practices, including vaccination, biosecurity, and treatment, constitute essential steps in effectively preventing diseases in livestock (Bonfanti et al., 2014). The medications studied included Iron (Fe), antibiotics, vitamins, anthelmintics, and anti-inflammatory. The biosecurity included quarantine cages for sick pigs and pens disinfection. The vaccinations included the administration of Hog cholera and *Septicaemia epizootica* vaccines. The data was then analyzed descriptively.

RESULTS AND DISCUSSION

Health Management of Gilts

Gilts health management that was implemented by CV. Roku, in Benteng Suru Village, Ruteng District, Manggarai Regency, is presented in Table 1 below.

Table 1. Implementation of gilts health management

Age	Number of gilts	Medication				
		Iron (Intrafer 200®)	Antibiotic (Limoxin- 200 LA)	Vitamin (Injectamin®)	Anthelmintics (Nemasol kaplet®)	Anti-inflammatory
3 months	6	No	No	No	No	No
5 months	3	No	No	No	No	No
7 months	5	No	Yes	Yes	Yes	No

Age	Number of gilts	Biosecurity		Vaccination	
		Isolation caged	Disinfection of stables	Hog Cholera	Septicaemia Epizootica (SE)
3 months	6	No	No	No	No
5 months	3	No	No	No	No
7 months	5	No	No	No	No

(Source : CV. Roku, 2023)

Health management applied to the gilts in CV. Roku included antibiotics and vitamins administration simultaneously. Anthelmintics are given 7 days after antibiotics and vitamins administration. The farmers administered antibiotics to prevent pathogenic bacteria from infecting the reproductive tract before the gilts become pregnant (Zamojska et al., 2021). The use of antibiotics in sows is also reported to prevent reproductive diseases (Van Rennings et al., 2015). Other studies have reported that an antibiotic-free strategy in pig farms can lead to reinfection, while proper and judicious use of antibiotics in diseases caused by porcine reproductive and respiratory syndrome viruses can enhance the reproductive health of pigs (Dee et al., 2018).

Gilts were given vitamins to maintain their overall health and reproductive tract health before being mated. Vitamin supplementation plays a crucial role in maintaining overall health and reproductive health in pigs (Vijayalakshmy et al., 2018). Giving vitamins to broodstock also aims to support the quality of mother's milk. Vitamins E and C were reported to have positive effects on sow's milk and colostrum during gestation (Sosnowska et al., 2011). Other studies report positive effects of vitamin A on reproductive physiology and fetal development (Marantidis et al., 2016).

The administration of anthelmintics to gilts aims to prevent the transmission of helminths before they become pregnant. This preventive measure is crucial in reducing the worm infection rate in pigs (Kouam et al., 2018). Deworming is considered a fundamental practice for controlling endoparasites, and it helps prevent sows from becoming a source of worm infection in piglets (Jankowska-Makosa et al., 2023).

Health Management for Sows

Sows health management that was implemented by CV. Roku, in Benteng Suru Village, Ruteng District, Manggarai Regency, is presented in Table 2. The health management in sows included vitamins, anti-inflammatories, and antibiotics administration simultaneously after parturition. Sows that have weaned piglets are given antibiotics and vitamins. Vitamins were supplemented to

sows after weaning to support reproduction and production in the next gestation period. Previous research reported that vitamins are a determinant in increasing production and reproductive performance (Ovchinnikov et al., 2021).

The administration of Vitamins E and C to pregnant and lactating sows, and vitamin D3 to lactating sows resulted in higher serum antibody concentrations in piglets weaned at 21 days old (Konowalchuk et al., 2013). Previous studies reported that the crossbreeding of Yorkshire and Landrace, duration of labor (117.2 ± 47.3 minutes, ranging from 28 to 383 minutes), and the type of anti-inflammatory drugs can influence the incidence of postpartum disorders in sow. Other studies report that postpartum care, such as antibiotics and anti-inflammatory drugs (Nam et al., 2022), helps reduce pain and the laying time of sows after giving birth, and provide analgesic effect on piglets (Mainau et al., 2012).

Primiparous sows are at a higher risk of developing postpartum illness than multiparous sows. Previous studies have reported that sows with a long duration of partum (4-8 hours) are at risk of experiencing fever within one day after giving birth and anti-inflammatory administration is very helpful in minimizing clinical symptoms of postpartum disorders in sows (Tummaruk & Sang-Gassanee, 2013). Oral administration of anti-inflammatory at the beginning of farrowing in multiparous sows can increase the concentration of immunoglobins and cytokines in pig colostrum (Navarro et al., 2021).

Antibiotics are given to sows after weaning to improve their conditions during suckling period of piglets. Previous studies have reported that this practice play an important role in increasing body weight and improving feed efficiency for weaning (Bohrer et al., 2019; Marszałek et al., 2019; Rasschaert et al., 2020). Administering antibiotics to post-weaning sows by injection aims to prevent reproductive disorders (Yang et al., 2019) and diseases, such as gastrointestinal diseases, laminitis, and postnatal infections (Bosman et al., 2022).

Table 2. Implementation of sow health management

Age	Number of sows	Time of Medication Administration	Medication				
			Iron (Intrafer 200®)	Antibiotic (Limoxin-200 LA)	Vitamin (Injectamin®)	Anthelmintics (Nemasol kaplet®)	Anti-inflammatory
2 years	5	Post-Partum	No	Yes	Yes	No	Yes
3 years	4	Lactation	No	No	No	No	No
5 years	7	Weaning	No	Yes	Yes	No	No
7 years	3	Dry Period	No	No	No	No	No

Age	Number of sows	Time of Medication Administration	Biosecurity		Vaccination	
			Isolation caged	Disinfection of stables	Hog Cholera	Septicaemia Epizootica (SE)
2 years	5	Post-Partum	No	No	No	No
3 years	4	Lactation	No	No	No	No
5 years	7	Weaning	No	No	No	No
7 years	3	Dry Period	No	No	No	No

(Source : CV. Roku, 2023)

Health Management of Piglets

Piglets health management that was implemented by CV. Roku, in Benteng Suru Village, Ruteng District, Manggarai Regency, is presented in Table 3. The health management applied included in CV Roku were the administration of Fe to piglets that were 3 days old, simultaneous Fe and antibiotics administration to piglets that were 14 days old, and simultaneous Fe, antibiotics, and vitamins administration to piglets that were 35 days old. Fe, antibiotics and vitamins are applied parenterally. Iron (Fe) supplementation for piglets is reported as a routine activity and must be carried out with different routes and doses according to the schedule of each pig farm (Svoboda et al., 2017). Giving iron (Fe) by intramuscular injection within 2-3 days after birth was routinely practiced in pig farms and was generally considered by farmers and veterinarians as the ema standard for the prevention/treatment of iron (Fe) deficiency anemia in suckling pigs (Svoboda & Píšťková, 2018). Iron (Fe) injection to newborn piglets was necessary because pregnant sows cannot provide sufficient amounts of iron (Fe) for the developing fetus (Szudzik et al., 2018).

Iron (Fe) supplementation for piglets aged 35 days aimed to prevent post-weaning anemia. Previous research reported that giving 150-20 mg of iron (Fe) at birth was only able to prevent iron deficiency for 21 days and with a single dose could not prevent anemia for more than 21 days after birth (Williams et al., 2020; Lindemann et al., 2021). Another study reported that suckling pigs grow rapidly and

have about 4 times greater body weight at weaning than at birth resulting in a greater susceptibility to iron deficiency anemia at weaning (Estienne et al., 2020; Jolliff & Mahan, 2011). Perri et al., (2016) reported that larger piglets at weaning had lower indicators of red blood cells and serum iron than smaller piglets. Bhattarai & Nielsen (2015) found out that larger weaning piglets had lower serum iron and total iron binding capacity, which made them susceptible to iron deficiency.

Antibiotics were administrated at CV Roku from the age of 14 to 35 days. The results of this research are consistent with the previous study, wherein farmers administered 50% penicillin, 26.5% oxytetracycline and sulfadimethypyrimidine, 23.5% amoxicillin, and 12.5% used other types of antibiotics (Arief et al., 2016). The study also reported that giving antibiotics to piglets aims to prevent diarrhea caused by enterotoxigenic *Escherichia coli* (ETEC) which occurs in piglets starting at 1-4 days of age, piglets 2-3 weeks after weaning with peak diarrhea occurring at 6-8 weeks. post weaning, and even at 12 weeks (Hartadi et al., 2020).

Vitamins is reported to function in normal metabolism and co-factor in the metabolic reactions of the body of pigs (Bulu et al., 2019). Vitamins A, D, and E, are injected into piglets at the age of 20 and 40 days (Lima et al., 2012). Previous research reported that there was a positive effect of giving vitamins on the early growth of piglets for breeding purposes (Santos et al., 2020).

Table 3. Implementation of piglet health management

Age	Number of gilts	Medication				
		Iron (Intrafer 200®)	Antibiotic (Limoxin- 200 LA)	Vitamin (Injectamin®)	Anthelmintics (Nemasol kaplet®)	Anti-inflammatory
1 days	70	No	No	No	No	No
3 days	85	Yes	No	No	No	No
14 days	72	Yes	Yes	No	No	No
35 days	67	Yes	Yes	Yes	No	No

Age	Number of gilts	Biosecurity		Vaccination	
		Isolation caged	Disinfection of stables	Hog Cholera	Septicaemia Epizootica (SE)
1 days	70	No	No	No	No
3 days	85	No	No	No	No
14 days	72	No	No	No	No
35 days	67	No	No	No	No

(Source : CV. Roku, 2023)

Another study reported that giving vitamin D3 significantly increased cellular and humoral immunity in piglets between 21 and 69 days of age (Konowalchuk et al., 2013).

CONCLUSIONS

Health management of breeding pigs studied at CV. Roku Ruteng, Manggarai, NTT was the application of medication, biosecurity, and vaccination. The results of the research showed that CV. Roku Ruteng, Manggarai, NTT; only applied the medication variables under study but didn't implement biosecurity and vaccination at all for gilts, sows, and piglets. This could be seen from the gilts kept on the farm only giving antibiotics, vitamins, and anthelmintics to pigs kept as medication. Furthermore, after the sows gave birth were only given antibiotics, vitamins, and anti-inflammatories; while the weaning sows were given vitamins and antibiotics as medication. In addition, the piglets raised on the farm are only given Iron (Fe), vitamins, and antibiotics. Based on the results of this study, the following recommendations could be given: (1) the management in CV. Roku needs to improve pig health management, (2) implemented biosecurity measures and vaccinations to prevent the disease from occurring in the pigs they keep; (3) this study didn't just identify the implementation of health management but needs to examine further the reasons for CV. Roku only gave medication to the pigs that were reared.

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