

Kajian Molekuler, Faktor Risiko, Dampak Sosial Ekonomi dan Aplikasi  
Teori *Plan Behaviour* Penyakit *African Swine Fever*  
pada Babi di Kabupaten Ngada

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## INTISARI

Penyakit *African Swine Fever* (ASF) merupakan penyakit viral hemoragik yang sangat menular pada babi dengan kematian mencapai 100% populasi. Virus ASF terdiri dari 24 genotipe yang menyebar ke seluruh dunia. Wabah ASF di Kabupaten Ngada terjadi pada tahun 2020 dan sporadis masih terus berlangsung. Penelitian ini bertujuan 1)mengidentifikasi virus ASF isolat Ngada dan kekerabatan genotipe; 2)mengukur asosiasi faktor-faktor demografi, manajemen beternak, ekonomi, pengetahuan peternak, biosekuriti, sosial budaya, dan pergerakan babi terhadap penyakit ASF; 3)mengkaji intensi peternak pada biosekuriti; 4)mengidentifikasi faktor-faktor sosial budaya terhadap penyakit ASF; 5)menghitung kerugian ekonomi dan efektifitas biaya biosekuriti pada penyakit ASF; serta 6)mengetahui pergerakan babi pada penyebaran penyakit ASF.

Data penelitian ini berupa data primer dan data sekunder. Data primer adalah sampel babi mati *suspect* ASF dan wawancara. Data sekunder yakni data kematian babi ASF, data sampel positif ASF, populasi babi, data peternak babi, dan data kependudukan. Sampel deteksi virus sebanyak 15 sampel dan dipilih 10 ekstrak. Sampel DNA positif ASF dilakukan *sequencing* dan filogenetik. Penentuan kecamatan dengan stratified berdasarkan etnis, desa/kelurahan dan responden peternak (KK) dilakukan rambang sederhana secara proporsional pada 6 kecamatan, 33 desa/kelurahan, dan 325 responden. Analisis pohon filogenetik menggunakan *software* MEGAXI. Faktor risiko dianalisis dengan chi-kuadrat, logistik regresi dan *Odds Ratio* menggunakan *software* SPSS 26. Kerugian ekonomi, *deccission tree analysis* dan Teori *Plan Behaviour* dengan *excel windows* 11. Data disajikan dalam bentuk tabel dan nilai rata-rata. Visualisasi data pada hasil analisis PCR berupa nilai kuantitas produk PCR ASF. Hasil *sequencing* adalah urutan *nukleotida* gen B646L.

Hasil analisis 10 sekuen dan filogenetik ASFV isolat Ngada memiliki kesamaan 100%. Sekuen Ngada disejajarkan dengan 20 sekuen virus ASF GenBank, yang kemudian dianalisis dengan pohon filogenetik menunjukkan similiaritas dengan genotipe II. Teori *Plan Behaviour* pada biosekuriti menunjukkan nilai variabel sikap terhadap perilaku 70,37% dan kontrol perilaku peternak 74,03% terhadap biosekuriti termasuk kategori baik. Norma subjektif 80,06% dan niat perilaku peternak 90,98% terhadap biosekuriti termasuk kategori sangat baik. Peternak Etnis Bajawa 57,2%, Soa 10,5% dan Riung 7,1%. Kerugian

ekonomi kematian babi tahun 2020, 2021, 2022, dan 2023 sebesar Rp 34.144.975.000 dan rata-rata kerugian per tahun sebesar Rp 6.828.995.000,-. Kerugian biaya produksi Rp 1.885.463.125,- dan kerugian tidak langsung sebesar Rp 64.610.000,. Analisis *decision tree* pada biosekuriti bernilai positif atau keuntungan sebesar Rp 1.723.141.000,- dan kerugian tanpa biosekuriti Rp -2.376.546.690. Pedagang memasukkan 63,6% babi ke Kabupaten Ngada, pemasukkan tertinggi berasal dari Kabupaten Manggarai Barat 13,6% dan *suspect* ASF 9,1%. Kesimpulan virus ASF Ngada termasuk genotipe II. Status demografi, faktor ekonomi, manajemen beternak, pengetahuan peternak, dan pergerakan babi berpengaruh signifikan pada ASF. Norma subjektif berpengaruh terhadap niat perilaku biosekuriti. Kerugian ekonomi paling tinggi karena kematian babi dan apabila peternak mendapatkan keuntungan melakukan biosekuriti.

**Katakunci:** ASF, epidemiologi, molekuler, biosekuriti, sosial budaya, ekonomi, pergerakan Babi.

Molecular Studies, Risk Factors, Socioeconomic Impacts and  
Applications Plan Behaviour Theory of African Swine  
Fever on Pigs in Ngada Regency

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**ABSTRACT**

African Swine Fever (ASF) is a highly contagious hemorrhagic viral disease in pigs with mortality reaching 100% of the population. The ASF virus consists of 24 genotypes that spread throughout the world. The ASF outbreak in Ngada Regency occurred in 2020 and is still ongoing sporadically. This study aims to 1) Identify ASF virus isolates from Ngada and their genotype relationships; 2) Measure the association of demographic factors, farming management, economics, farmer knowledge, biosecurity, social culture, and pig movement with ASF disease; 3) Assess farmers' intentions regarding biosecurity; 4) Identify socio-cultural factors in ASF disease; 5) Calculate the economic losses and cost effectiveness of biosecurity in ASF disease; and 6) Knowing the movement of pigs on the spread of ASF disease.

This research data consists of primary data and secondary data. Primary data is a sample of dead pigs suspect ASF and interview. Secondary data is ASF pig mortality data, ASF positive sample data, pig population, pig breeder data and population data. There were 15 virus detection samples and 10 extracts were selected. ASF positive DNA samples were performed sequencing and phylogenetics. Determination of sub-districts stratified based on ethnicity, village/sub-district and farmer respondents (KK) was carried out by simple proportional random sampling in 6 sub-districts, 33 villages/sub-districts and 325 respondents. Phylogenetic tree analysis using software MEGAXI. Risk factors were analyzed by chi-square, and logistic regression Odds Ratio use software SPSS 26. Economic losses, deccission tree analysis and Toeri Plan Behaviour with excel windows 11. Data is presented in table form and average values. Visualization of data on PCR analysis results in the form of ASF PCR product quantity values. Results sequencing is a sequence nucleotides gen B646L.

The results of the analysis of 10 sequences and phylogenetics of ASFV isolates from Ngada had 100% similarity. The Ngada sequence was aligned with 20 GenBank ASF virus sequences, which were then analyzed using a phylogenetic tree showing similarity to genotype II. Theory Plan Behaviour on biosecurity, the attitude variable value towards behavior shows 70.37% and farmer behavior control 74.03% towards biosecurity, including the good category. Subjective norms of 80.06% and farmer behavioral intentions of 90.98% regarding biosecurity are in the very good category. Bajawa Ethnic Breeders 57.2%, Soa

10.5% and Riung 7.1%. The economic loss from pig deaths in 2020, 2021, 2022 and 2023 is IDR 34,144,975,000 and the average loss per year is IDR 6,828,995,000. Production cost losses were IDR 1,885,463,125 and indirect losses were IDR 64,610,000. Analysis decision tree with biosecurity it has a positive value or a profit of IDR 1,723,141,000,- and a loss without biosecurity IDR - 2,376,546,690. Traders brought 63.6% of pigs into Ngada Regency, the highest import came from West Manggarai Regency 13.6% and suspect ASF 9.1%. Conclusion ASF Ngada virus includes genotype II. Demographic status, economic factors, breeding management, breeder knowledge, and pig movements have a significant effect on ASF. Subjective norms influence biosecurity behavioral intentions. The highest economic loss is due to the death of pigs and when farmers make a profit doing biosecurity.

**Keyword:** ASF, epidemiology, molecular, biosecurity, socio-cultural, economic, Pig movement.