

## **SIMULASI PERKEMBANGAN JUMLAH POPULASI DAN ESTIMASI PARAMETER PERBIBITAN SAPI BALI DI KECAMATAN TARANO, SUMBAWA, NTB**

### **INTISARI**

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Penelitian ini bertujuan untuk mensimulasikan perkembangan jumlah populasi sapi Bali di kecamatan Tarano, kabupaten Sumbawa, yang dikelompokkan ke dalam kategori rendah, sedang, dan tinggi dan mengestimasi parameter perbibitan (*natural increase*=NI; *net replacement rate*=NRR dan *output*) serta pendapatan bruto lima tahun mendatang. Penelitian dilakukan pada bulan Agustus sampai dengan Oktober 2024. Data yang diambil meliputi data primer dan data sekunder. Data primer dikumpulkan melalui wawancara menggunakan kuesioner terhadap peternak sapi Bali yang memenuhi kriteria seperti lama pemeliharaan minimal lima tahun dan memiliki ternak sapi Bali minimal empat sampai lima ekor, sedangkan data sekunder berupa data populasi akhir tahun 2023 yang diperoleh dari KUPT Produksi dan Kesehatan Hewan Kecamatan Empang yang digunakan sebagai dasar simulasi pengembangan populasi dan parameter pembibitan lima tahun kedepan. Hasil penelitian menunjukkan peningkatan populasi sapi Bali di semua kategori. Populasi sapi Bali di Kecamatan Tarano mengalami peningkatan signifikan pada semua kategori selama 2024–2028, masing-masing sebesar 58,66% (rendah), 55,43% (sedang), dan 55,62% (tinggi). Rata-rata NI di masing-masing kategori rendah, sedang dan tinggi berturut-turut mencapai 19,93; 21,49; dan 25,50%. Untuk rata-rata NRR jantan sebesar 106,13; 161,13; dan 210,53%, sedangkan NRR betina 111,28; 165,75; dan 199,71% secara berturut-turut di kategori rendah, sedang dan tinggi. *Output* sapi Bali meningkat sebesar 33,93% (rendah), 49,28% (sedang), dan 78,00% (tinggi), dengan nilai penjualan bruto lima tahun sebesar Rp3,63 miliar, Rp6,15 miliar, dan Rp10,87 miliar. Hasil ini menunjukkan bahwa perkembangan jumlah populasi di Kecamatan Tarano diprediksi akan mengalami peningkatan dan layak dijadikan sebagai sumber bibit sapi Bali.

**Kata Kunci:** Sapi Bali, Dinamika Populasi, *Natural increase* (NI), *Net replacement rate* (NRR), *Output*.

## **SIMULATION OF POPULATION GROWTH AND ESTIMATION OF BREEDING PARAMETERS OF BALI CATTLE IN TARANO SUBDISTRICT, SUMBAWA, WEST NUSA TENGGARA**

### **ABSTRACT**

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This study aims to simulate the population growth of Bali cattle in Tarano Subdistrict, Sumbawa Regency, classified into low, medium, and high population categories, and to estimate breeding parameters (*natural increase* = NI; *net replacement rate* = NRR; and *output*), as well as project the gross income over the next five years. The research was conducted from August to October 2024. Data collected included both primary and secondary sources. Primary data were obtained through interviews using questionnaires targeting Bali cattle farmers who met specific criteria, such as a minimum of five years of farming experience and ownership of at least four to five Bali cattle. Secondary data consisted of end-of-2023 population records sourced from the Production and Animal Health Technical Implementation Unit (KUPT) of Empang Subdistrict, which served as the baseline for the five-year simulation of population growth and breeding parameters. The results indicate an increase in Bali cattle population across all categories. The population in Tarano Subdistrict showed a significant rise from 2024 to 2028, with growth rates of 58.66% (low), 55.43% (medium), and 55.62% (high). The average NI in the low, medium, and high categories reached 19.93%, 21.49%, and 25.50%, respectively. The average male NRR was 106.13%, 161.13%, and 210.53%, while the female NRR was 111.28%, 165.75%, and 199.71%, respectively. The output of Bali cattle increased by 33.93% (low), 49.28% (medium), and 78.00% (high), with projected gross sales over five years amounting to IDR 3.63 billion, IDR 6.15 billion, and IDR 10.87 billion. These results suggest that the Bali cattle population in Tarano Subdistrict is projected to grow significantly and that the area is feasible to be developed as a source of Bali cattle breeding stock.

**Keywords:** Bali Cattle, Population Dynamic, Natural increase (NI), Net Replacement Rate (NRR), Output.