Calculation of Theoretical Sample Size

From the statistical point of view, following equation is employed to calculate the desirable sample size.

$$n \approx \left(\frac{2k}{CI}\right)^2 s^2$$

CI =2x (T x SE)

Where :

n : Theoretically desirable Sample size

k : Critical value of Normal Distribution

s^2 : Estimate variance of mother population

CI : Confidence Interval

T: Score of t-distribution (99% significance level)

SE : Standard error of the sample

Based on the data attached actual measurement data, theoretical sample size of each stage of swain population is calculated as follows;

Poker :

For Poker, complete weight measurement was conducted for all population.

Gilts

k = 2.625 for significance level of 99%

s^2 = 109.9 for total measured poker population of 156

CI =5.40 for significance level of 99%

n ≈ (2x2.625/5.38)^2 x 110 =96.8 ≈ 97 < 100

Piglet;

k = 2.625 for significance level of 99%

s^2 = 0.12 for total measured poker population of 284

CI =0.196 for significance level of 99%

$n \approx (2x2.625/(2x0.098))^{\wedge 2} x\ 0.12 = 78.6 \approx 79 < 100$

Weaner;

k = 2.625 for significance level of 99%

s^2 = 0.87 for total measured poker population of 500*

CI =0.68 for significance level of 99%

$n \approx (2x2.625/(2x0.33))^{\wedge 2} x0.87 = 48.1 \approx 49 < 100$

* For weaner, 50 sets of Average weight data was used for calculation.

For Boar and Sow, complete weight measurement was conducted for all population.

As shown above, all theoretical sample size for each stage are enough smaller than or equal 100 (i.e. the sample size employed by the Bulan CDM project).

For that reason, the sample size and average weight are representative of total swine population in Bulan island.