Formula for Calculating Number of Replicates

$$r \geq 2\frac{CV^2}{D^2}(t_1 + t_2)^2$$

$$r \geq 2\frac{s^2}{d^2}(t_1 + t_2)^2$$

r = number of reps
CV = coefficient of variation
D = true difference it is desired to detect as a % of mean
t_1 = tabular t value for a specified level of significance and df for error
t_2 = tabular t value for df for error and a probability of 2(1-P), where P is the probability of detecting a significant result in a particular experiment
s = standard deviation
d = true difference it is desired to detect

Options for Obtaining the Desired Number of Replications

Conditions	D	CV	t_1	$t_2(P)$	r
100 bu	10%	10%	1%	95%	37
Reduce t_1 & P	10	10	5	90	22
Increase D	20	10	5	90	7
Reduce CV	10	5	5	90	7
Reduce P	10	10	5	80	17

From Cochran and Cox, 1957.