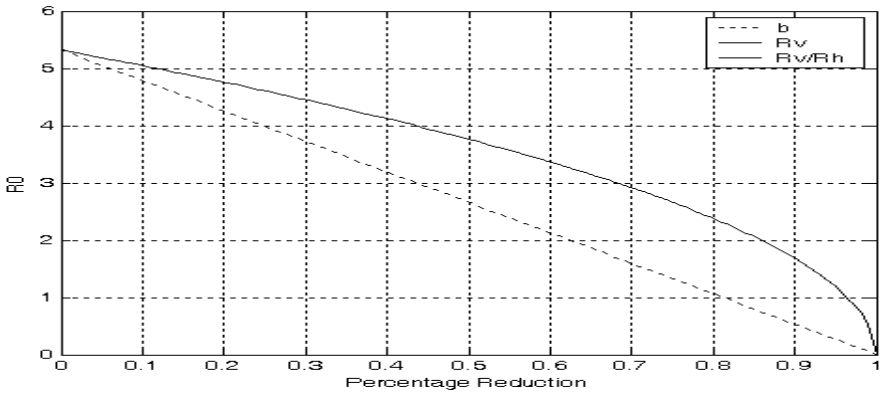
Perkembangan Tesis 2 Februari 2006
Berdasarkan Paper Model Matematika Kaki Gajah

Basic reproduction Number Model Baru dan Model Terbaru sama



Model Baru

$$\frac{dS_h}{dt} = R_h + \alpha \frac{A}{N_h} n(\delta A - \mu_h K) - bI_v \frac{S_h}{N_h} p_h - \mu_h S_h$$

$$\frac{dA}{dt} = bI_v \frac{S_h}{N_h} p_h - \delta A - \alpha \frac{A}{N_h} n(\delta A - \mu_h K) - \mu_h A$$

$$\frac{dK}{dt} = \delta A - \mu_h K$$

$$\frac{dS_h}{dt} = R_v - bS_v \frac{A}{N_h} p_v - \mu_v S_v$$

$$\frac{dI_v}{dt} = bS_v \frac{A}{N_h} p_v - \mu_v I_v$$

Model Terbaru

$$\frac{dS_h}{dt} = R_h + \alpha \frac{A}{N_h} nK - bI_v \frac{S_h}{N_h} p_h - \mu_h S_h$$

$$\frac{dA}{dt} = bI_v \frac{S_h}{N_h} p_h - \delta A - \alpha \frac{A}{N_h} nK - \mu_h A$$

$$\frac{dK}{dt} = \delta A - \mu_h K$$

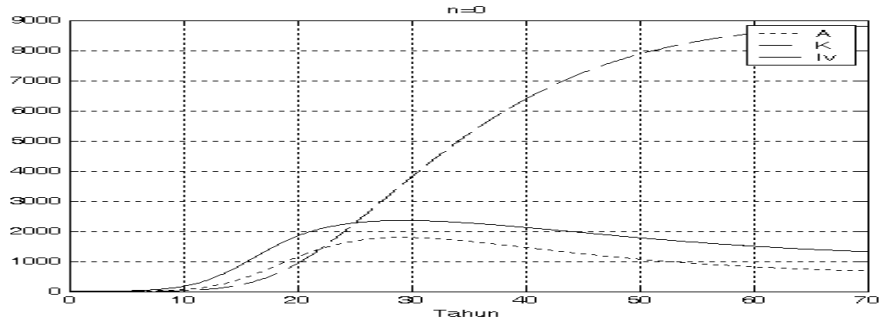
$$\frac{dS_h}{dt} = R_v - bS_v \frac{(A+K)}{N_h} p_v - \mu_v S_v$$

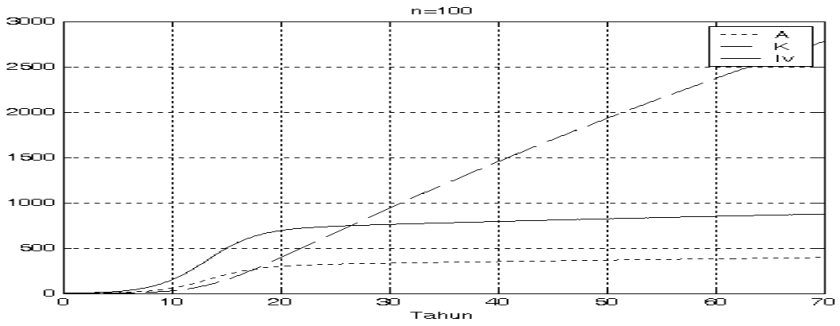
$$\frac{dI_v}{dt} = bS_v \frac{(A+K)}{N_h} p_v - \mu_v I_v$$

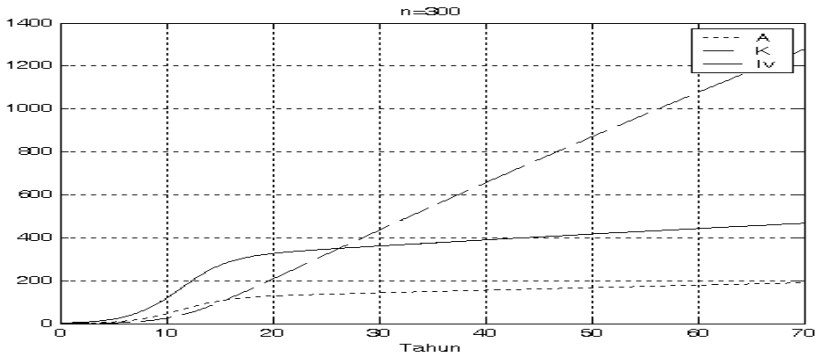
Numerical Simulation

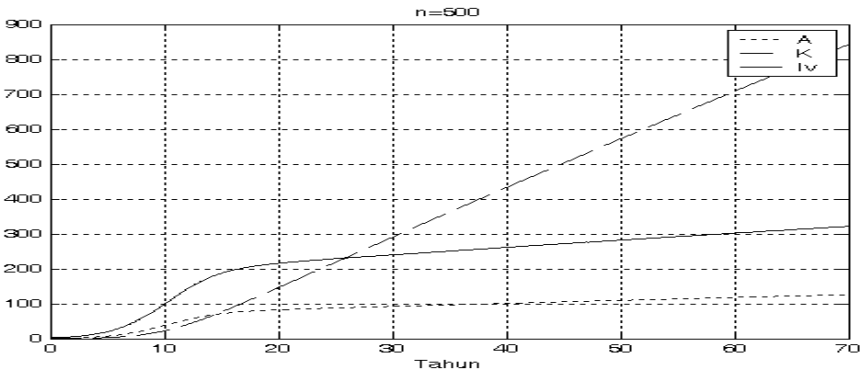
We have $p_h = 0.001$, $\mu_h = \frac{1}{70} / year$, $\mu_v = 12.67 / year$, $p_v = 0.5$, $\alpha = 0.9 / year$, $b = 243\ biting / a\ mosquito / year$, $\delta = 0.2 / year$, $n = 500$, $R_h = 235$, $R_v = 55000$, initial condition $(A, K, I_v) = (1, 0, 0)$

Model Baru

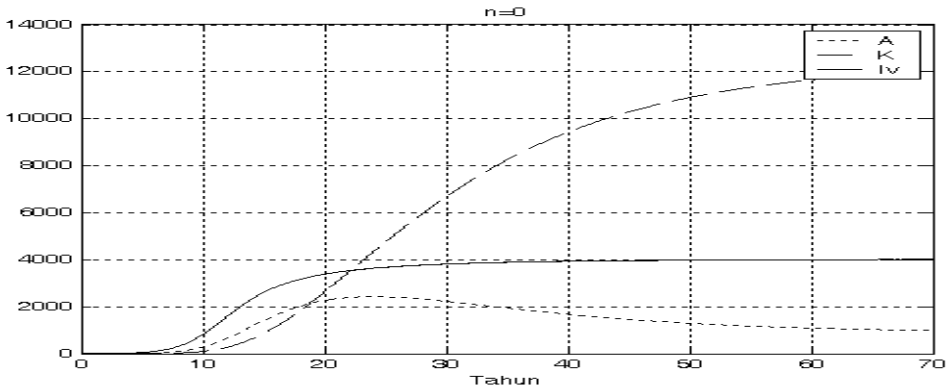


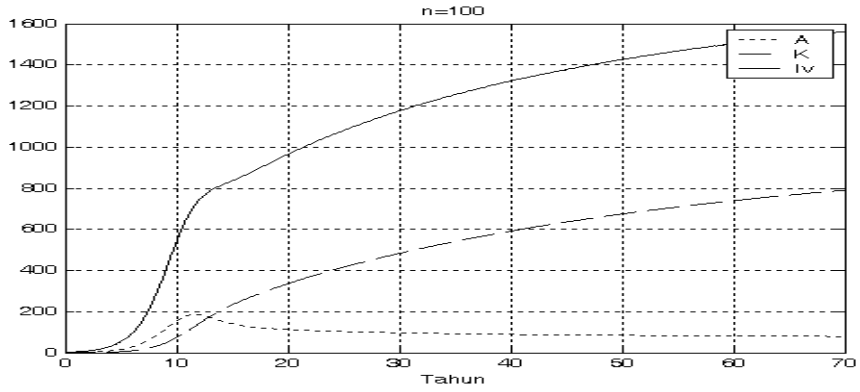


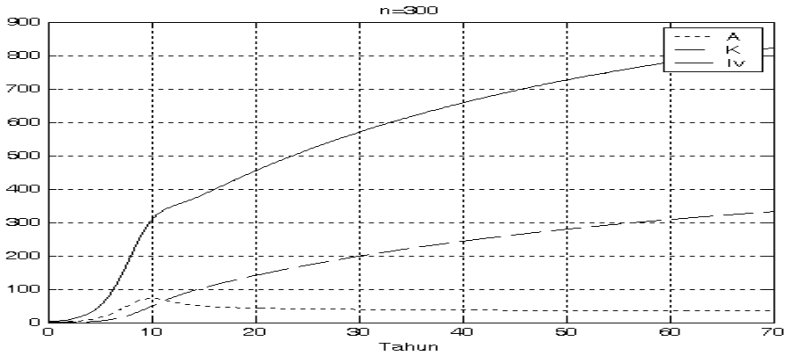


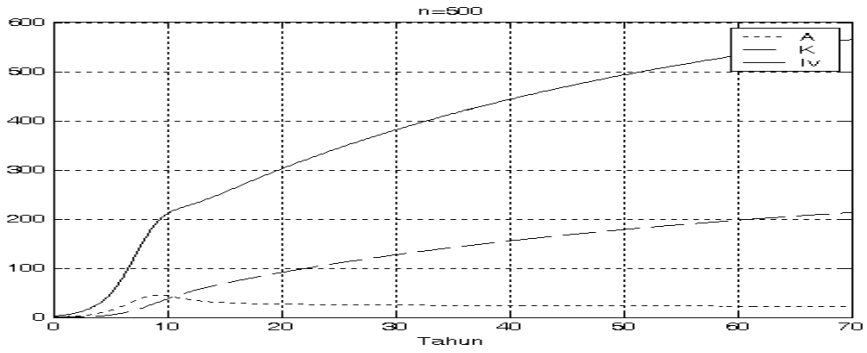


Model Terbaru





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A
K
lv
600
500
400
300
200
100
0
0
10
20
30
40
50
60
70
Tahun

Model Salah asumsi