breed [ rabbits rabbit ]
rabbits-own [ energy ]

to setup
  clear-all
  set-default-shape rabbits "rabbit"
  ask patches [  
    if random 100 < 15 [
      set pcolor green
    ]
  ]
  create-rabbits num-rabbits [  
    set color white
    set xcor random-xcor
    set ycor random-ycor
    set energy random 10
  ]
  reset-ticks
end

to go
  manage-rabbits
  manage-grass
  tick
end

to manage-rabbits
  ask rabbits [  
    move
    eat
    reproduce
    death
  ]
end

to manage-grass
  ask patches [  
    grow
  ]
end

to move
  rt random wiggle-angle
  lt random wiggle-angle
  fd wiggle-distance
  set energy energy - .5
end
to eat
  if pcolor = green [  
    set pcolor brown  
    set energy energy + grass-energy  
  ]
end

to reproduce
  if energy > birth-energy [  
    set energy energy - birth-cost  
    set energy energy / 2  
    hatch 1 [  
      fd 1  
      set heading random 360  
    ]  
  ]
end

to death
  if energy <= 0 [  
    die  
  ]
end

to grow
  if pcolor = green [  
    if random 100 < grass-grow-rate [  
      ask one-of neighbors [  
        set pcolor green  
      ]  
    ]  
  ]
end