

breed [bugs bug]

breed [pesticides pesticide]

turtles-own [energy]

undirected-link-breed [kills kill]

globals [number-dead]

to setup

clear-all

ask patches [

set pcolor green

ask n-of 3 patches [set pcolor 56]

ask n-of 3 patches [set pcolor lime]]

set-default-shape bugs "butterfly"

create-bugs initial-number-bugs [

set size .5

set label-color blue - 2

setxy random-xcor random-ycor

]

set-default-shape pesticides "airplane"

create-pesticides initial-number-pesticides [

set color black

set size 3.5

setxy random-xcor random-ycor

]

reset-ticks

end

to go

tick

if not any? turtles [stop]

ask bugs [

move

death

```
    reproduce-bugs  
  ]  
  ask pesticides [  
    fly  
    kill-bugs  
  ]  
  plot count bugs  
end
```

```
to fly  
  fd 1  
end
```

```
to move  
  rt random 5  
  lt random 5  
  fd 1  
end
```

```
to reproduce-bugs  
  if random-float 160 < bugs-reproduce [  
    set energy (energy / 1)  
    hatch 1 [ rt random-float 360 fd 1 ]  
  ]  
end
```

```
to kill-bugs
```

```
  let prey one-of bugs-here  
  if prey != nobody  
    [ ask prey [ die ]  
  ]  
end
```

```
to death  
  if energy < 0 [  
    [ ask prey [ die ]  
  ]  
end
```

```
set number-dead number-dead + 1  
die  
]  
end
```

```
to setup-aggregate  
set-current-plot "populations"  
clear-plot  
end
```