Science Activity Worksheet

How do pesticides affect the ability of butterfly larvae to find food?

Question 1

a) How did the caterpillar move? Did it use (circle the correct answer):

Inching behaviour (Ω) crawling behaviour

b) Use 3 words or short phrases to describe the caterpillar's movement behaviour whilst it was trying to find a food plant.

1)……

2)……

3)……

Question 2

a) Did the caterpillar find a host plant (circle the correct answer)?

YES NO

b) If you used a stopwatch to time how long it took for the caterpillar to reach the plant, write this time below. Don't forget to say which units you used to record the time (was it in seconds, minutes or hours?).

……

Question 3

The caterpillar you watched on the video was not the only caterpillar tested. Table 1 below shows the results for 26 other caterpillars that were tested from the 'No pesticide' treatment group. Each caterpillar has been given a label (A to Z) so that the scientist could record whether each caterpillar tested in the experiment did or did not find a food plant. If a caterpillar did find a food plant, the scientist recorded 'yes' in the 'Did the caterpillar reach the plant?' column in Table 1. If a caterpillar did not find a food plant, the scientist recorded 'no' in the 'Did the caterpillar reach the plant?' column in Table 1.

The caterpillar you watched on the video was labelled caterpillar ‘S’. Find caterpillar ‘S’ in Table 1 (below) and write down in the column ‘Did the caterpillar reach the plant’ whether caterpillar number ‘S’ did or did not find a food plant (see your answer to Question 2). If caterpillar ‘S’ did find the food plant, write ‘yes’ in Table 1. If caterpillar S did not find the food plant, write ‘no’ in Table 1.

Table 1: The number of caterpillars (labelled A-Z) in the ‘No pesticide’ treatment group that did or did not find a food plant.

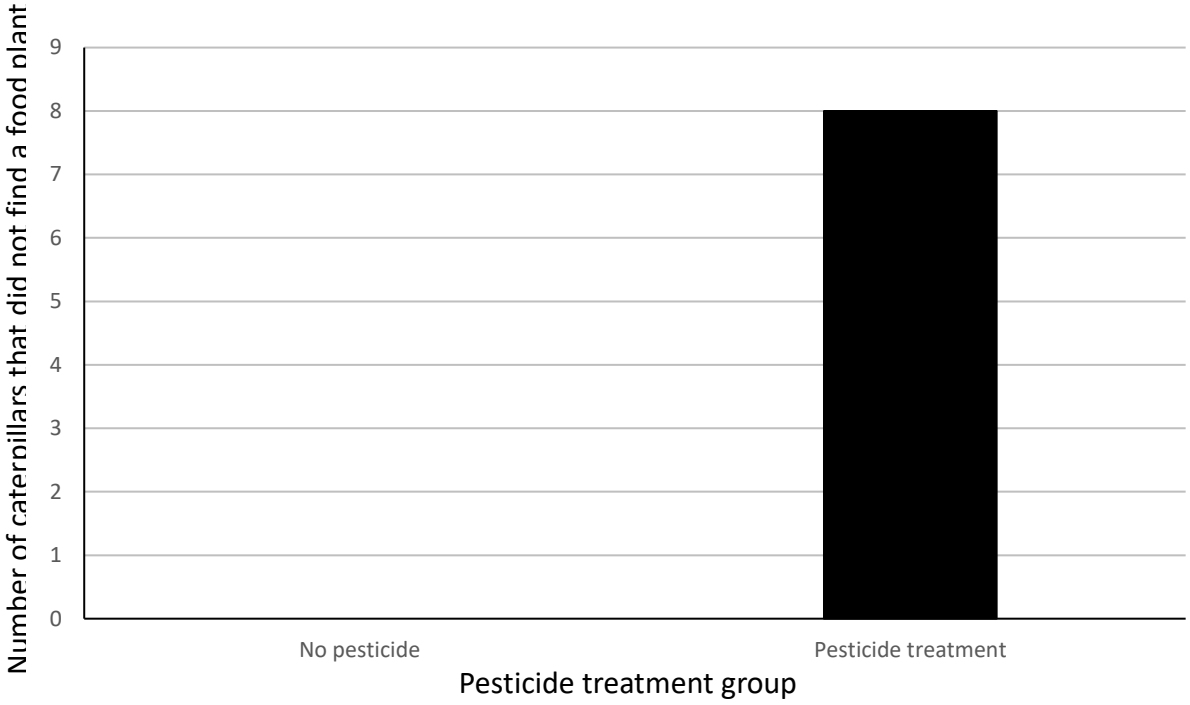
Caterpillar	Treatment group	Did the caterpillar reach the plant?
A	No pesticide	No
B	No pesticide	Yes
C	No pesticide	Yes
D	No pesticide	Yes
E	No pesticide	Yes
F	No pesticide	No
G	No pesticide	Yes
H	No pesticide	Yes
I	No pesticide	Yes
J	No pesticide	Yes
K	No pesticide	Yes
L	No pesticide	No
M	No pesticide	Yes
N	No pesticide	Yes
O	No pesticide	Yes
P	No pesticide	Yes
Q	No pesticide	Yes
R	No pesticide	Yes
S	No pesticide	
T	No pesticide	Yes
U	No pesticide	Yes
V	No pesticide	Yes
W	No pesticide	No
X	No pesticide	Yes
Y	No pesticide	Yes
Z	No pesticide	Yes

Question 4

a) Using the information (data) in Table 1 (above), count the number of caterpillars that **did not** find the food plant, and write the number here:

……..

b) Using all of the results from each caterpillar, the scientist has started to draw a graph to look at the number of caterpillars that **did not** find a food plant (Graph 1, below). You can see that in the pesticide group 8 caterpillars did not find a food plant. How does this compare to the no pesticide group? Use the answer that you gave in Question 4(a) to finish this graph and compare. Use a pencil and a ruler to draw onto the graph the number of caterpillars in the 'No pesticide' treatment group that did not find a food plant.



Graph 1: The number of caterpillars in each pesticide treatment group that did not find a food plant

Question 4 continued

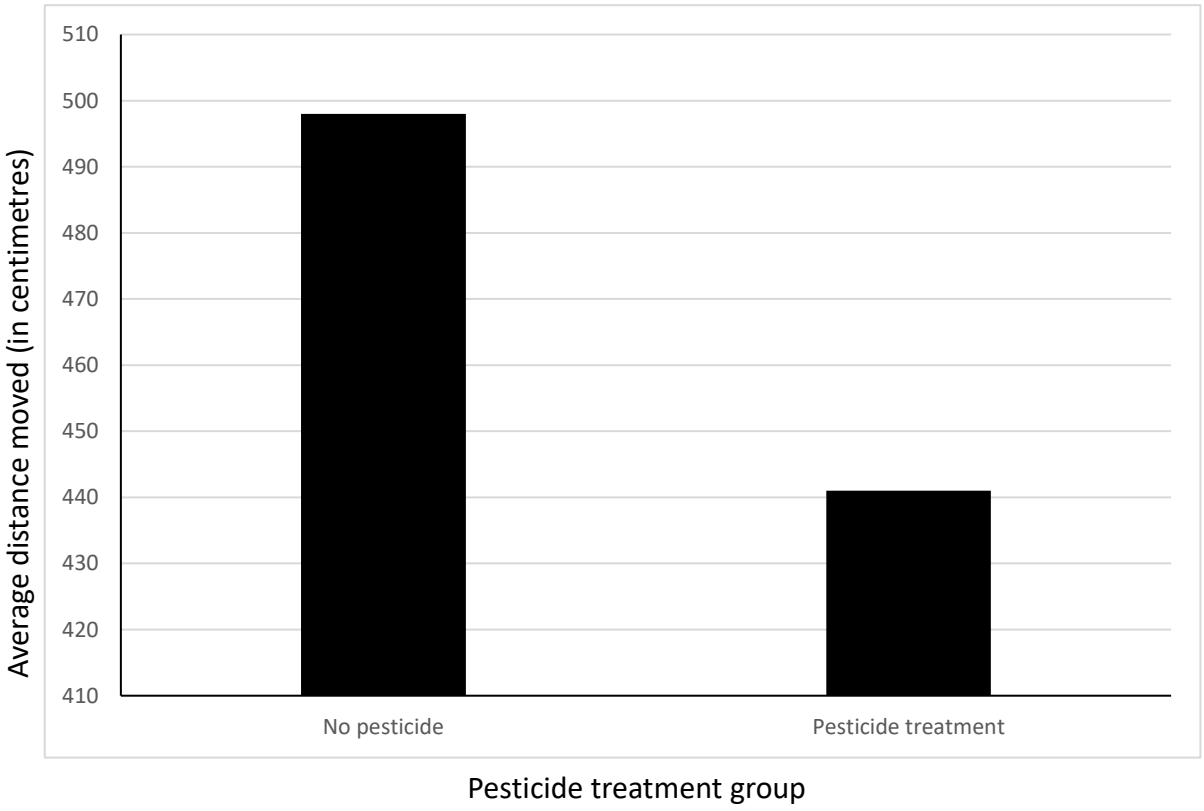
c. Use Graph 1 to help you answer this question. In which pesticide treatment group did the caterpillars find it more difficult to find a food plant (circle the correct answer)?

no pesticide pesticide treatment

Question 5

The scientist measured (in cm's) how far each caterpillar moved whilst searching for a food plant. The scientist has drawn Graph 2 (below) to compare the average distance caterpillars moved in the 'no pesticide' treatment group with the average distance moved by caterpillars in the 'pesticide treatment group'. Use the information in Graph 2 to answer the question below. In which group did the caterpillars move over longer distances to search for a food plant (no pesticide or treated with pesticide; circle the correct answer)?

no pesticide pesticide treatment



Graph 2: Average distance moved (in centimetres) by caterpillars whilst trying to find a food plant

Question 6

Using the information that you and the scientists have collected during this experiment, do you think pesticides in the environment make it more difficult for caterpillars to find food plants (circle your answer)?

Yes No

Explain your reasons for thinking this:

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……
……
……
……

Question 7

Using the information you and the scientists have collected during this experiment, if pesticides were sprayed on food plants in places where these caterpillars live, do you think their numbers will go up or down (circle your answer):

Caterpillar numbers with go up Caterpillar numbers will go down

Data credits: Scarlett Ferguson

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