

Unit 3 Sustainability & Interdependence

Key Area 3 Crop Protection Answers

1. A
2. C
3. B
4. C
5. D
6. C

7.

Question		Acceptable answer(s)	Max Mark	Unacceptable answer	Negates
(a)		Will kill/destroy the whole plant/ roots/underground stems and so avoid regeneration/ regrowth/ coming back	1	affect	
(b)	(i)	Introduced species/they may become invasive/pest OR may out-compete native species and reduce biodiversity OR may introduce disease/ parasites OR may eat/destroy native/other plants OR may disrupt food webs/ chains OR acts as predators to native species	1		confusion with couch grass
(b)	(ii)	chemical biological/ cultural means used OR descriptions Any 2 = 1	1		

8. A

9.

(a)	Biological (control)	1
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(b)	May have alternative prey/food source/niche/resources OR Not competing with the Harlequin ladybird OR Less competition with other native species OR Not preyed upon by Harlequin ladybirds	1
(c)	Free from its usual predators/parasites/pathogens /disease/competitors	1

10.

(a)	(i)	<p>Reduced/no photosynthesis. 2</p> <p>OR</p> <p>Leaves are needed for photosynthesis. (1)</p> <p>Less energy/glucose/carbohydrate/ respiration for growth. (1)</p> <p>OR</p> <p>Caterpillars are vectors for disease /spread disease to plants. (1)</p> <p>Disease reduces growth. (1)</p>	
	(ii)	<p>Chemicals-</p> <p>kill/harm other species/decrease biodiversity</p> <p>OR</p> <p>biomagnify/bioaccumulate</p> <p>OR</p> <p>accumulate/build up in organism/food chain/ environment/ecosystem</p> <p>OR</p> <p>magnify up the food chain</p> <p>OR</p> <p>persist in the environment / ecosystem</p> <p>OR</p> <p>create resistant populations/pests</p> <p>OR</p> <p>on the crop can be harmful to health.</p> <p>(Or converse of any of the above written in terms of biological control/it) eg 'biological control/it does not kill other species'.</p> <p>OR</p> <p>Biological control only kills/targets caterpillars/ one species.</p>	1

(b)	(i)	15	1	
	(ii)	<p>The original and modified Bt toxins used together kill more caterpillars than either alone.</p> <p>OR</p> <p>Modified Bt toxin kills 65(%) of caterpillars compared to 15(%) in Bt toxin but taken together they kill 80(%).</p>	1	<p>NOT- modified Bt toxin kills more than Bt toxin.</p> <p>NOT- modified kills 65% of caterpillars compared to 15% in modified.</p>