

New
Specification



Rewarding Learning

General Certificate of Secondary Education

Agriculture and Land Use

Unit 1
Soils, Crops and Habitats

[GAU11]

Assessment

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are intended to ensure that the GCSE examinations are marked consistently and fairly. The mark schemes provide markers with an indication of the nature and range of candidates' responses likely to be worthy of credit. They also set out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for GCSE Agriculture and Land Use.

Candidates must:

- recall, select, and communicate their knowledge and understanding of agriculture and land use in the environment and land-based industries (AO1);
- apply skills, knowledge and understanding of agriculture and land use in the environment and land-based industries and other contexts (AO2); and
- analyse and evaluate evidence, make reasoned judgements and draw conclusions based on evidence (AO3).

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 16-year-old which is the age at which the majority of candidates sit their GCSE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, markers are expected to use their professional judgement to assess the validity of answers.

Positive marking

Markers are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Markers should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 16-year-old GCSE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Marking Calculations

In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Notation:

; denotes separate points

/ denotes alternative points

(alternative points do not gain extra marks)

			AVAILABLE MARKS
1	(a) Order is: seed drill; disc harrow; roller; plough ([1] for each correct answer)	[4]	6
	(b) Correct order is D B A C (3/4 correct = [2] , 1/2 correct = [1])	[2]	
2	(a) In order from the LHS: carbon dioxide; light; oxygen ([1] for each correct answer)	[3]	7
	(b) (i) Any three in order from: Place leaf in boiling water; place leaf in boiling alcohol; dip leaf in water; test with iodine; yellow-brown to blue-black colour change (allow orange to black)	[3]	
	(ii) heat alcohol in water bath/use safety glasses/no naked flames	[1]	
3	(a) (i) sandy/light/well drained/loam	[1]	9
	(ii) soil heats up quicker/soil drains easily; plant grows quicker/ potato doesn't rot;	[2]	
	(b) (i) frost damage/water damage in early spring	[1]	
	(ii) Any two from: better price; market demand; spreads risk throughout the year; spreads work throughout the year; disease less likely; could plant another crop; easier harvesting conditions	[2]	
	(c) Any three from: in a clean; dark; weather proof shed; potatoes are left unwashed; control temperature; humidity; ventilation; vermin [Max two marks for factors that should be controlled]	[3]	

			AVAILABLE MARKS	
4	(a)	(i) 75 [1] divided by 5 = 15 [1]	[2]	10
		(ii) more cover/more food/less predators/trap A was above the ground/ not set properly	[1]	
		(iii) Any two from: same length of time; same type of trap/same size of trap; same depth of hole; traps set at same time	[2]	
	(b)	(i) type of (invertebrate) species/number of plant species	[1]	
		(ii) more traps in each area/longer time/camera watching the traps/ more repeats	[1]	
		(iii) conservation worker/environmental surveyor/field biologist/teacher/ AVP	[1]	
	(c) Any two from: Plant more trees; leave areas uncut/cut grass areas less often; don't spray weeds; build bird boxes; provide more habitats/build a pond; AVP	[2]		
5	(a) Correct scale and labels; correct graph type; 3 bars plotted correctly; all bars plotted correctly (–1 if graph is less than half of the graph page)	[4]	8	
	(b) 12 000 ÷ 2300 [1]; 5.2 [1] (allow 2 or 3 SF only)	[2]		
	(c) Answers depend on chosen crop Potatoes – crisps; ready meals; chips; AVP Oats – porridge; oat cakes; cookies; AVP Wheat – bread; pasta; beer; animal feed; AVP Barley – beer; whiskey; animal feed; AVP	[2]		

- 6 (a) (i) A = denitrification; B = nitrification; C = nitrogen fixation [3]
- (ii) bacteria [1]
- (iii) Any **two** from:
potassium; phosphorus; magnesium; calcium; sulphur [2]
- (iv) Any **two** from:
spread manure/slurry/allow animals onto the land; plant legumes/
named example; drain ground/aerate ground/plough ground;
plant winter crop cover [2]
- (b) (i) Any **two** from:
wastes fertiliser/money; plant doesn't grow as well;
pollutes waterways/eutrophication [2]
- (ii) Any **two** from:
spread in dry weather; use large tyres; don't spread in the winter/don't
spread in the closed season;
spread accurately/use GPS/spread the correct amount; use the correct
fertiliser; don't spread near waterways [2]

AVAILABLE
MARKS

12

7 GM crop production (max 3)

Find the desired gene in an organism; desired gene from an organism is removed; insert the desired gene into a (recipient) plant's DNA; grow the new improved plant; test the new plant; produce seeds on large scale;

Advantages (max 4)

Disease resistant; pest resistant; extreme weather resistant; increased yield; higher nutrition; enhanced flavour; less need for sprays; less water pollution; feed larger population; grown on marginal land; reduces land use; herbicide resistant; ; less costs/less labour;

Disadvantages (max 3)

Interbreed with other species/gene transferred to wild species; other wild species of plant can't compete; superweeds; less biodiversity; reliance on seed companies/expensive seed; ethical reasons; unknown long term effects;

If candidates do not meet the minimum requirements set out in each band then they cannot access that mark band, no matter how many correct points they have. 1 mark is awarded for QWC if appropriate.

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of at least two steps to explain how GM crops are produced. They accurately describe and explain three advantages of GM crops and one disadvantage of GM crops. Quality of written communication is excellent. Relevant material is organised with a high degree of clarity and coherence. Presentation, spelling, punctuation and grammar are of a high standard with appropriate use being made of specialist vocabulary.	[7]–[9]
2	Candidates demonstrate a detailed knowledge and understanding of at least one step to explain how GM crops are produced. They accurately describe and explain two advantages of GM crops and one disadvantage of GM crops. Quality of written communication is good. Relevant material is organised with some clarity and coherence. Presentation, spelling, punctuation and grammar are of a reasonable standard to make meaning evident. There is some use of appropriate specialist vocabulary.	[4]–[6]
1	General statements about GM crops. Quality of written communication is basic. The organisation of material may lack clarity and coherence. Presentation, spelling, punctuation and grammar are at a basic level with little use of appropriate specialist vocabulary.	[1]–[3]
0	No creditable comments.	[0]

[9]

9

- 8 (a) (i) environment; rural [2]
- (ii) Any **two** from:
 give advice; online recording tools (APHIS); help limit spread of disease;
 provide business information; help farmers claim aid; [2]
- (b) RSPB/Ulster Wildlife Trust/Rivers Agency/AVP [1]

AVAILABLE
MARKS

5

9 **Indicative content:**

- Differences: wheat flower has anthers outside flower; stigma outside flower; no scent; no coloured petals; no nectar; small pollen grains; many pollen grains; feathery stigma **or** opposites for insect pollinated flower
- Pollination: is the movement of pollen; from an anther; to the stigma of a plant; by wind
- Germination: moisture/water; heat/warmth; oxygen (do not accept air)

If candidates do not meet the minimum requirements set out in each band then they cannot access that mark band, no matter how many correct points they have. 1 mark is awarded for QWC if appropriate.

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of at least three differences between a wheat flower and an insect pollinated flower. They accurately describe at least two steps to the pollination process and give two conditions needed for germination. Quality of written communication is excellent. Relevant material is organised with a high degree of clarity and coherence. Presentation, spelling, punctuation and grammar are of a high standard with appropriate use being made of specialist vocabulary.	[7]–[9]
2	Candidates demonstrate a detailed knowledge and understanding of at least two differences between a wheat flower and an insect pollinated flower. They accurately describe at least one step to the pollination process and give one condition needed for germination. Quality of written communication is good. Relevant material is organised with some clarity and coherence. Presentation, spelling, punctuation and grammar are of a reasonable standard to make meaning evident. There is some use of appropriate specialist vocabulary.	[4]–[6]
1	General statements about pollination. Quality of written communication is basic. The organisation of material may lack clarity and coherence. Presentation, spelling, punctuation and grammar are at a basic level with little use of appropriate specialist vocabulary.	[1]–[3]
0	No creditable comments.	[0]

[9]

9

Total

75