



Rewarding Learning

General Certificate of Secondary Education
2015

Centre Number

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Candidate Number

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Agriculture and Land Use

Unit 1

Soils, Crops and Habitats

[GAL11]

FRIDAY 22 MAY, AFTERNOON

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

Answer **all ten** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 75.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in questions **6** and **8(b)**.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total Marks	

1 Look at the photographs of machinery used on the farm. Identify the machinery shown in each photograph.

Draw lines to match the photograph of each piece of machinery to its name.

The first one has been done for you.



© Russ Munn / Agstockusa / Science Photo Library

Seed drill



© Jakub Jirsák / Hemera / Thinkstock

Plough



© GordonBellPhotography/ iStock/ Thinkstock

Sprayer



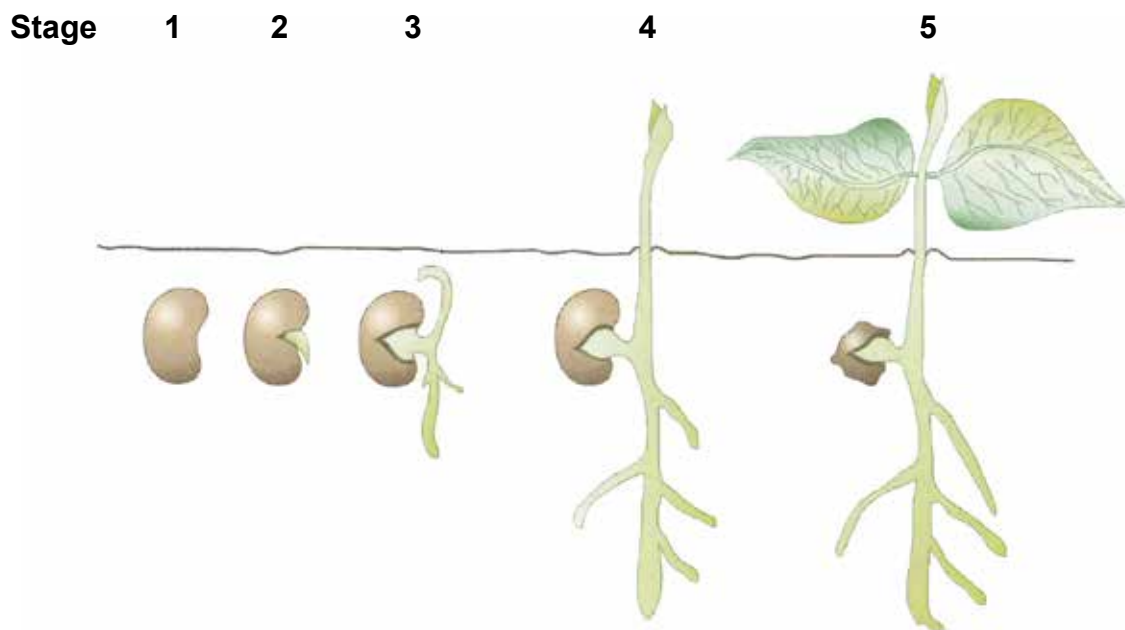
© JimHarrogate/ iStock/ Thinkstock

Slurry tanker

Combine harvester

Examiner Only	
Marks	Remark

2 The diagram below shows the different stages of the germination of a bean seed.



© GCSE Biology for CCEA by James Napier and Rose McIlwaine. Published by Hodder Education in 2003.
ISBN 9780340858257. Reproduced by permission of Hodder Education.

(a) Using the diagram above, describe what is happening at stages 2, 3 and 4.

Stage 2 _____

Stage 3 _____

Stage 4 _____

_____ [3]

(b) Name the **three** conditions needed for seeds to germinate.

[3]

Examiner Only	
Marks	Remark

3 Potatoes are an important farm crop in Northern Ireland. Potatoes are grown as annuals.

(a) Explain what is meant by an **annual** crop.

_____ [1]

Potato Blight Warning!

Blight cannot be cured. Crops must be protected by spraying with approved fungicides.

Organic farmers
Only certain fungicides can be used.
Not to be used routinely.

(b) Blight is a disease that can impact crop yield in potatoes. Apart from disease, state **two** other factors that can impact crop yield.

1. _____

2. _____ [2]

(c) Some farmers choose to use organic farming methods, even though it is difficult to produce crops like potatoes in this way.

Describe **two** advantages of organic farming methods.

1. _____

2. _____

_____ [2]

Examiner Only	
Marks	Remark

4 Farms use energy in different ways.

(a) State **two** ways that energy is used on a farm.

1. _____
2. _____ [2]

(b) Farms can generate energy from crops.

(i) What is the name given to the type of crop used to generate energy?

_____ [1]

(ii) Give **one** example of this type of crop.

_____ [1]

(iii) Explain how energy generated from these crops helps to reduce carbon emissions.

 _____ [2]

(c) (i) Give **two** ways that energy can be saved on a farm.

1. _____
2. _____ [2]

(ii) Give **two** ways that energy can be generated on a farm (besides using crops).

1. _____
2. _____ [2]

Examiner Only	
Marks	Remark

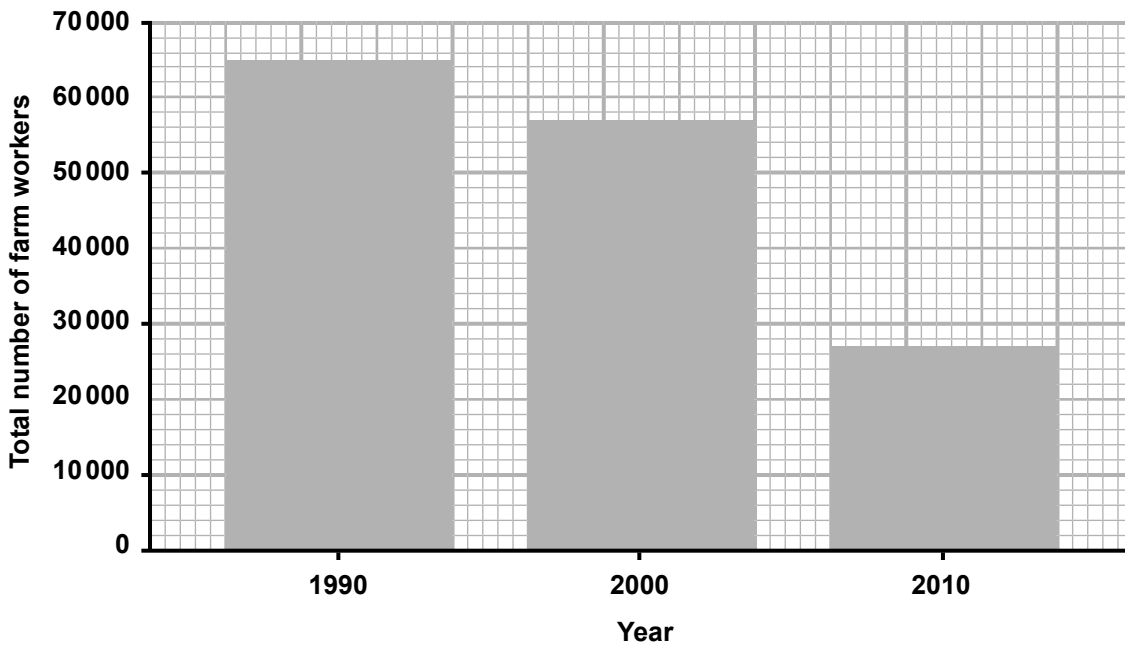
5 There are many different jobs in the agri-food and land use sectors in Northern Ireland.

(a) Apart from farmer, name **two** other careers within the agri-food sector.

1. _____
2. _____ [2]

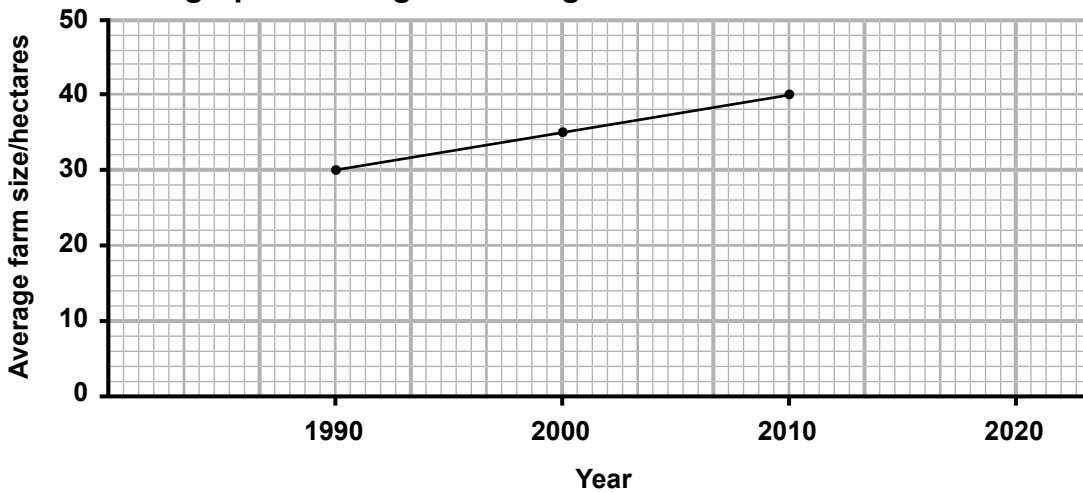
(b) The graphs below show information on the number of farm workers and average farm size since 1990 in Northern Ireland.

A graph showing the total number of farm workers in 1990, 2000 and 2010



Source: Adapted from 'The Agricultural Census in Northern Ireland', Results for June 2013. A National Statistics Publication © Crown Copyright

A graph showing the average farm size from 1990 onwards



Source: Adapted from 'The Agricultural Census in Northern Ireland', Results for June 2013. A National Statistics Publication © Crown Copyright

Examiner Only	
Marks	Remark

7 Grassland covers 60% of the land area of Northern Ireland.

Two photographs of grassland habitats are shown below. One is **unimproved** and one is **improved**.

Examiner Only	
Marks	Remark



© Bjanka Kadic / Science Photo Library



© ShotShare / iStock / Thinkstock

Unimproved

Improved

(a) State **one** difference between unimproved and improved grassland.

_____ [1]

(b) (i) Give **one** reason why farmers would improve grassland.

_____ [1]

(ii) Describe **two** ways a farmer could improve grassland.

1. _____ [2]

2. _____

(c) Name two **abiotic** factors that affect grassland.

1. _____ [2]

2. _____

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(Questions continue overleaf)

8 (a) Soils are made up of different size particles. These are shown in the diagram below.

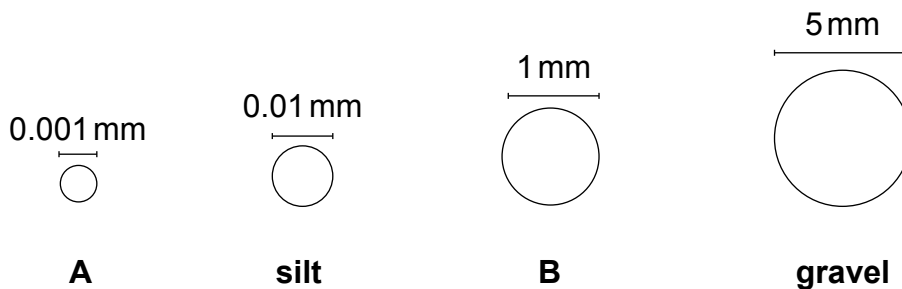


diagram not to scale

© CCEA

Identify soil particles **A** and **B**.

A: _____

B: _____ [2]

(b) A farmer wants to grow maize for winter feed.

Describe **three** tests you could carry out to find out if the soil is suitable to grow maize.

Maize requires a well-drained, slightly acidic, sandy-loam soil.

In your answer include:

- the equipment used
- any calculations involved.

In this question you will be assessed on your written communication skills including the use of specialist terms.

Examiner Only	
Marks	Remark

9 (a) Tomato plants require a range of nutrients.

Fertilisers are added to increase the nutrients available to plants.

A good nutrient solution would be:

	Phosphorus	Potassium
N = 4	P = 38	K = 18

(i) Complete the table above to show the name of the missing nutrient.

[1]

(ii) State what the numbers on the above table represent.

[1]

Examiner Only

Marks Remark

- (b) The following table shows the average yield (in kg) of tomatoes produced from plants grown using different methods, over three years.

	Average yield per plant/kg		
	Outdoor (in soil)	Glasshouse (in soil)	Glasshouse (hydroponic)
Year 1	5.5	10	25
Year 2	6	11	24
Year 3	5.5	6.5	25
Total Production	17	27.5	74

© CCEA

Look at total production.

- (i) Calculate the **difference** in total production of hydroponic plants and outdoor grown plants.

_____ kg [1]

- (ii) Suggest **one** reason for the **reduction** in average yield of the glasshouse (soil grown) tomato plants in Year 3.

 _____ [1]

- (iii) Using your knowledge and the table above, give **two** advantages of using hydroponics to grow food.

1. _____
 2. _____ [2]

- (iv) Suggest **one** reason why hydroponics are **not** widely used.

 _____ [1]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

10 (a) The Irish hare is a priority species in Northern Ireland.

A photograph of an Irish hare is shown below.



© Andrew Kelly / Hare Preservation Trust

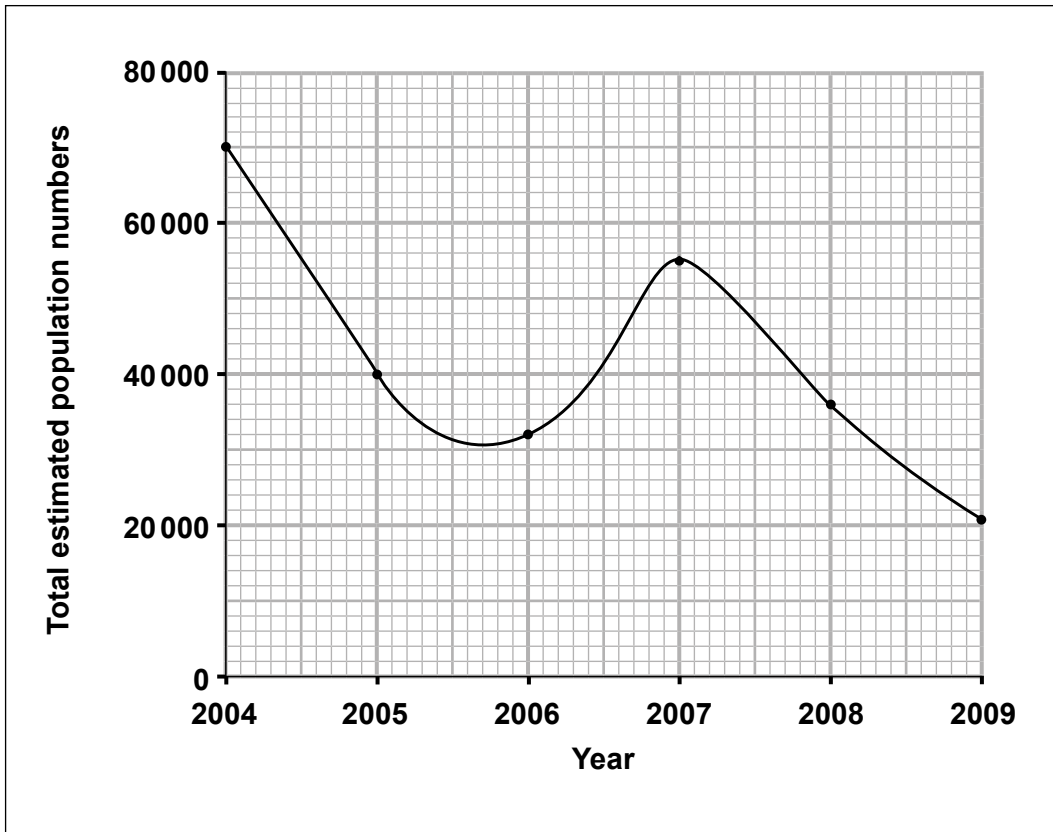
(i) What is a priority species?

_____ [1]

(ii) Name **one** other priority species found in Northern Ireland.

_____ [1]

(b) The graph below shows the population of the Irish hare between 2004 and 2009.



© Crown Copyright 2015, Adapted from Reid, N., Harrison, A.T. & Robb, G.N. (2008) Northern Ireland Irish hare survey 2009. Report prepared by the Natural Heritage Research Partnership, Quercus for the Northern Ireland Environment Agency. Northern Ireland Environment Agency Research and Development Series No. 09/04

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