

3 There are now over 1400 seedbanks in the world and they store plant seeds to maintain genetic diversity. Plant seeds are carefully selected and processed so they can be stored for years in a seedbank.

(a) Give **two** differences between genetic diversity and species richness.

(2)

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(b) (i) Suggest **two** reasons why it is better to store seeds rather than to store whole plants.

(2)

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(ii) Suggest why it is better to store seeds from several individual plants of one species rather than seeds from one individual plant.

(2)

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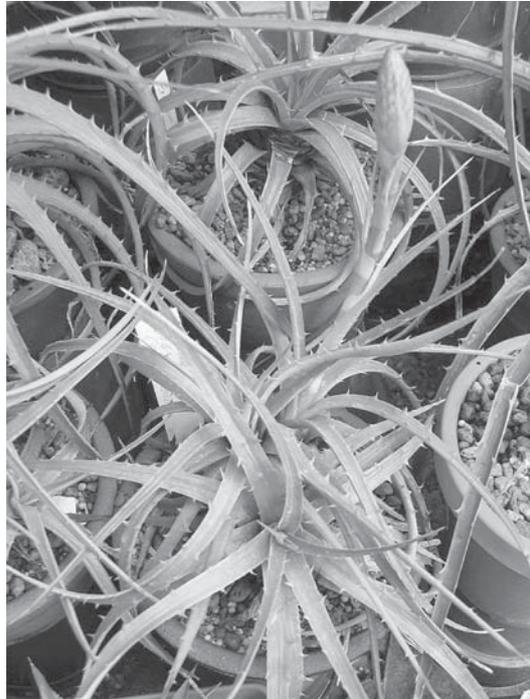
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QUESTION 3 CONTINUES ON THE NEXT PAGE



- (c) Seeds that are selected for storage are usually dried to remove most of the water before they are placed in a seedbank.

An investigation was carried out to study the effect of drying on the germination success of seeds from *Encholirium* plants, shown in the photograph below.



Magnification $\times 0.2$

One hundred seeds were collected from each of four species of *Encholirium*. The seeds from each species were separated into two groups, each containing 50 seeds.

One group of 50 seeds was planted immediately after collection. The other group of 50 seeds was dried after collection and then planted. Germination success was measured as the number of seeds that germinated out of the 50 seeds planted.

This was repeated several times and the mean germination success was calculated. The results are shown in the table below.

<i>Encholirium</i> species	Mean germination success for 50 seeds	
	Planted immediately	Planted after drying
A	48	45
B	40	23
C	45	45
D	48	37



(i) Use the data in the table to calculate, for *Encholirium* species A, the percentage decrease in mean germination success for dried seeds compared with seeds planted immediately. Show your working.

(2)

Answer %

(ii) Using the data in the table, suggest which of the four species is **least** likely to survive storage in a seedbank. Give reasons for your answer.

(3)

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(iii) Suggest how seeds from these *Encholirium* species may need to be treated to ensure their long term survival in a seedbank.

(2)

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(Total for Question 3 = 13 marks)

