



CHEMISTRY ONLINE
— **TUITION** —

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BIOLOGY

ENERGY TRANSFERS IN & BETWEEN ORGANISMS

Level & Board

AQA (A-LEVEL)

TOPIC:

NUTRIENT CYCLES

PAPER TYPE:

SOLUTION - 2

TOTAL QUESTIONS

6

TOTAL MARKS

24

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Nutrient Cycles - 2

1.

(a)

DNA

RNA

ATP

2.

(a) 90 to 133.2

(b)

- Over time, more artificial fertilizer is being used but there is less response as time goes on/the fertilizer is less effective over time
- The fertilizer becomes less cost effective over time
- Whilst the graph shows correlation it does not prove that the change in yield is due to the fertilizer, meaning that there could be other factors too

3.

(a)

To kill any fungus / bacteria on surface of seeds or in soil

So only the added fungus has any effect.

(b) So that only nitrate or ammonia / type of fertilizer affects growth.

(c)

So that effects of nitrate or ammonium alone could be seen

So that effects of fungus can be seen.

(d) During the drying process, the scientists should have maintained a high temperature, usually 105°C-115°C, for a sufficient period of time, commonly 24 hours, to ensure that all of the water had been completely evaporated from the plant samples.

OR

Weigh samples at intervals during drying. To see if weighing became constant.

4.

(a)

Fungus increases growth of roots and shoots in both

Produces greater growth with nitrate.

(b)

Similar dry masses for roots and shoots

No significant difference because SDs overlap

(c) The determination of dry mass was an appropriate method because it provides a reliable measure of plant growth. The size of a plant can change with its water content so measuring dry mass eliminates this variable and only accounts for the actual biomass of the plant.

OR

Dry mass measures organic material

Water content varies.

(d)

Fungus with nitrate-containing fertilizer gave largest shoot: root ratio

And largest dry mass of shoot

6.09:1 compared with ammonium-containing fertilizer 4.18:1

5.

(a) R.

(b)

Proteins broken down into ammonia

By saprobionts

(c)

Increased fertility as more nitrate formed

Aeration reduced denitrification

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- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
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