

BIOLOGY

Item 1

A farmer owns an acre of land which he has been using to grow maize crops for the last 15 years. Last season he observed that his crops were stunted with yellow leaves and later formed few maize cobs.

The agricultural extension officer attributed the condition of crops to mineral deficiency and advised the farmers to add a certain fertilizer to the garden. Later the crops were observed to have greener larger leaves with numerous flowers and the farmer managed to get some yields.

Tasks

a) Explain how mineral deficiency caused the observed features of the maize crops.

b) Show how each feature the plant had affected the plants normal functioning leading to poor yields.

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c) How did the maize crops later manage to give yields?

Item 3

In the hilly area with scattered trees, farmers constantly dig up and down the hill to grow the crops, cut down the trees for charcoal and often graze large herds of their cattle on the hill. During heavy rains, the area faces mudslides and flooding in the valleys.

Residents attribute these challenges to the activities happening on the hill.

Tasks:

a) Explain how each of the farmers action has resulted to the challenges faced during heavy rains in the valleys.

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b) Show how the above challenges can be minimised.

Item 3

Jayden, a 3-year-old boy of blood group **B** was weaned at 2 years. Since weaning, he has been feeding majorly on rice and cassava.

Jayden's medical records indicate that he *has reddish hair and wasted muscles, frequently suffers from infections, always weak, he passes out an abnormally small volume of yellow urine, severely anaemic and with weak bones.*

One day at the hospital, it was also noted that Jayden was recommended for a blood transfusion but the only safe blood available in the hospital was of group A. The mother wondered why the hospital could not carry out transfusion using the available blood.

Task

(a) Explain the causes of Jayden's health condition.

(b) Suggest what can be done to improve Jayden's health condition without taking him to hospital.

(c) Explain to Jayden's mother why the available blood could not be given to Jayden.

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