

Chlorophyll UK

**Sunlight House
Photosynthesis Industrial Estate
Yorkshire**

**Plant Research Manager:
B N Picking**

7th July

Dear Research Group

We produce fertilizer and other nutrient products for a range of plant crops. These crops include cereals, potatoes and different types of fruit.

We know that if the plant gets the right balance of nutrients, it will grow and be healthy, and produce good crops for the farmer.

We are interested in investigating the growth of root crops (like radishes and carrots), flowering crops (such as sunflowers) and leafy crops (e.g. such as spinach and cabbage).

We want to make a product that will give all the essential nutrients to these plants, to make the roots, leaves and flowers grow healthily, so that farmers can produce healthy and strong crops.

To do this, we need you to:

Compare different types of soil to find out which help root crops, flowering crops and leafy crops grow the best.

Research what different nutrients do to different parts of a plant.

Find out how different amounts of nutrients affect the growth of root crops, flowering crops and leafy crops.

We look forward to hearing from you with your results.

Yours faithfully

B N Picking

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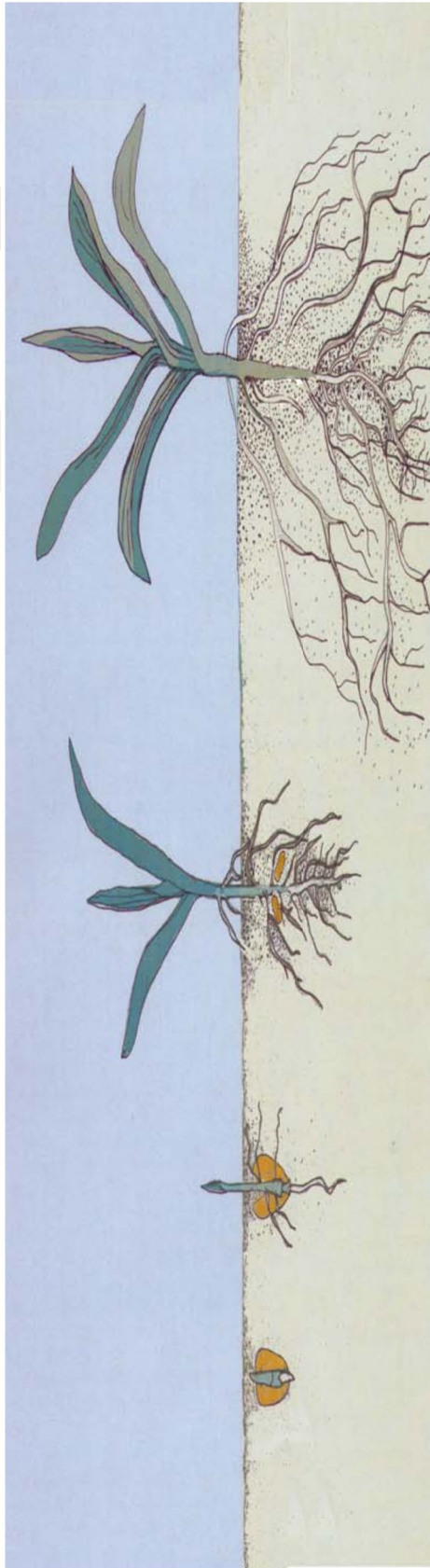
Plant Research Manager

Activity Sheet 2b



The function of leaves

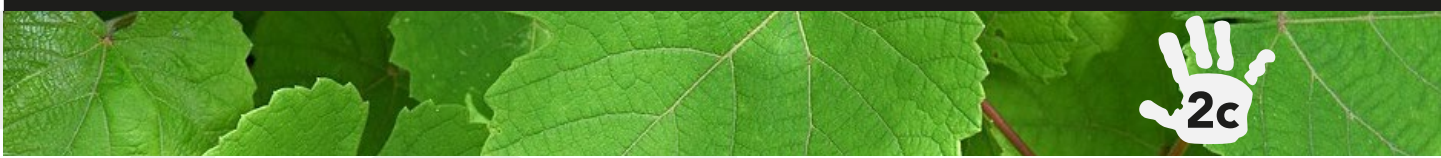
Here are some pictures of the different stages of plant growth of a healthy maize plant



In the boxes below, draw how you think the plant would have grown with its leaves removed.

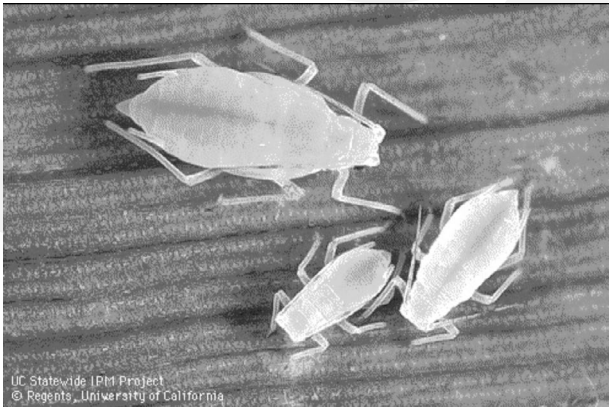
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Activity Sheet 2c: Leaves



For a plant to survive, its leaves have to withstand harsh weather and attack from mini-beasts. Think about how the leaf is protected from harsh weather such as rain, hail and harsh winds.

Look at these photographs of different mini-beasts. They all feed off leaves, but they do it in different ways. Look carefully to see the two different methods.



The aphid has a spike (proboscis) that they plunge into the leaf and use to suck out the juices.

The caterpillar and grasshopper have scissor-like jaws to cut the leaf.



How do you think the leaf is protected from aphid, grasshopper, or caterpillar attack?

Now recreate harsh weather conditions and mini-beast attack on the leaf you made.



What happened to your leaf?

How was it protected?

Activity Sheet 2d: Fertilizer labels



Analysis		2kge
COMPOUND FERTILIZER 10 7 10		
containing magnesium		
NITROGEN (N) Total		10.5%
PHOSPHORUS PENTOXIDE (P ₂ O ₅) Total	7.5% (3.3%P)	
of which soluble in water	4.5% (2.0%P)	
POTASSIUM OXIDE (K ₂ O) Total	10.5% (8.7%K)	
MAGNESIUM OXIDE (MgO) Total	4.5% (2.7%Mg)	

Fast Plant Fertilizer

Compound fertiliser 4-3-2.5	
Nitrogen (N).....	4.0%
Phosphorous Pentoxide (P ₂ O ₅).....	3.0%
Phosphorous Pentoxide (P ₂ O ₅) soluble in water.....	0.5%
Potassium Oxide (K ₂ O).....	2.5%

Rooster Organic Chicken Manure Pellets

ACID PLANT FOOD AND TONIC	
E.E.C. FERTILISER	
N.P.K. FERTILISER 15-10-15	
Containing Magnesium and Sulphur with Iron and Manganese	
(MgO 2.5-SO ₃ 30.0)	
Total Nitrogen (N).....	15.0%
Nitric Nitrogen (N).....	4.6%
Ammoniacal Nitrogen (N).....	10.4%
Phosphorus Pentoxide (P ₂ O ₅)	
Soluble in Neutral Ammonium Citrate and Water.....	10.0% (P4.4%)
Phosphorus Pentoxide (P ₂ O ₅)	
Soluble in Water.....	10.0% (P4.4%)
Potassium Oxide (K ₂ O)	
Soluble in Water.....	15.0% (12.3%)
Magnesium Oxide (MgO)	
Total.....	2.5% (Mg 1.5%)
Soluble in Water.....	2.5% (Mg 1.5%)
Sulphur Trioxide (SO ₃)	
Total.....	30.0% (S 12.0%)
Soluble in Water.....	29.8% (S 11.9%)
Iron (Fe)	
Total.....	0.26%
Soluble in Water all chelated	
Chelated by EDTA.....	0.26%
Manganese (Mn)	
Total.....	0.028%
Soluble in Water.....	0.026%

Muck and Magic Fertilizer

EEC FERTILISER NPK FERTILISER	
12 : 6 : 27 + Trace Elements	
Total Nitrogen (N)	12.00%
Nitric Nitrogen	0.00%
Ammoniacal Nitrogen	6.80%
Ureic Nitrogen	5.20%
Phosphorus Pentoxide (P ₂ O ₅)	
(water & amm. citrate soluble)	6.00%
Potassium Oxide (K ₂ O)	
soluble in water	27.00%
Magnesium Oxide (MgO)	2.00%
Boron (B)	0.010%
Copper (Cu)	0.002%
Iron (Fe)	0.02%
Manganese (Mn)	0.01%
Molybdenum (Mo)	0.0008%
Zinc (Zn)	0.002%

Fruitful General Purpose Fertilizer

EEC FERTILISER NPK FERTILISER 12.5 - 5.0- 24.5	
Containing Magnesium and Sulphur with Iron and Manganese (MgO 2.2 - SO ₃ 21.5)	
Total Nitrogen (N).....	12.5%
Nitric Nitrogen (N).....	7.4%
Ammoniacal Nitrogen (N).....	5.1%
Phosphorus Pentoxide (P ₂ O ₅) Soluble in neutral ammonium citrate and water.....	5.0% (P 2.2%)
Phosphorus Pentoxide (P ₂ O ₅)	
Soluble in water.....	5.0% (P 2.2%)
Potassium Oxide (K ₂ O)	
Soluble in water.....	24.5% (K 20.3%)
Magnesium Oxide (MgO) Total	2.2% (Mg 1.3%)
Soluble in water.....	2.2% (Mg 1.3%)
Sulphur Trioxide (SO ₃) Total ...	21.5% (S 8.6%)
Soluble in water.....	21.5% (S 8.6%)
Iron (Fe) Total.....	0.40%
Soluble in water.....	0.35%
Manganese (Mn) Total.....	0.02%
Soluble in water.....	0.02%
Calcium Oxide (CaO)	
Soluble in water.....	2.2% (Ca 1.6%)

Speed Grow Fertilizer

ANALYSIS	
NPK FERTILIZER 5:6:12	
NITROGEN (N)	5%
PHOSPHORUS PENTOXIDE (P ₂ O ₅)	6% (P 2.6%)
soluble in neutral ammonium citrate and in water (P ₂ O ₅)	5.5% (P 2.4%)
soluble in water (P ₂ O ₅)	5% (P 2.2%)
POTASSIUM OXIDE (K ₂ O)	
soluble in water	12% (K 10%)
MAGNESIUM OXIDE (MgO)	2.5% (Mg 1.5%)
IRON (Fe)	0.6%
GYPSUM	

Hercules Fertilizer