SPROUT IQ

Fertilizers

Why do we use fertilizers?

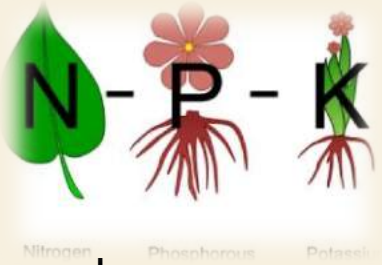
- Soils often lack these nutrients, either naturally, or as a result of over cultivation or other environmental factors.

- Therefore nutrients (in a form of fertilizers) must be put back into the soil in order to create the ideal environment for optimal plant growth.

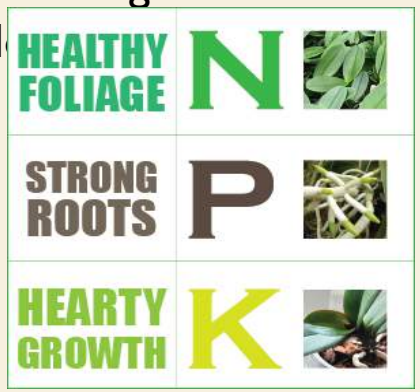
  - The essential nutrients consists of: Nitrogen (N), Phosphorus (P) and Potassium (K) → N:P:K

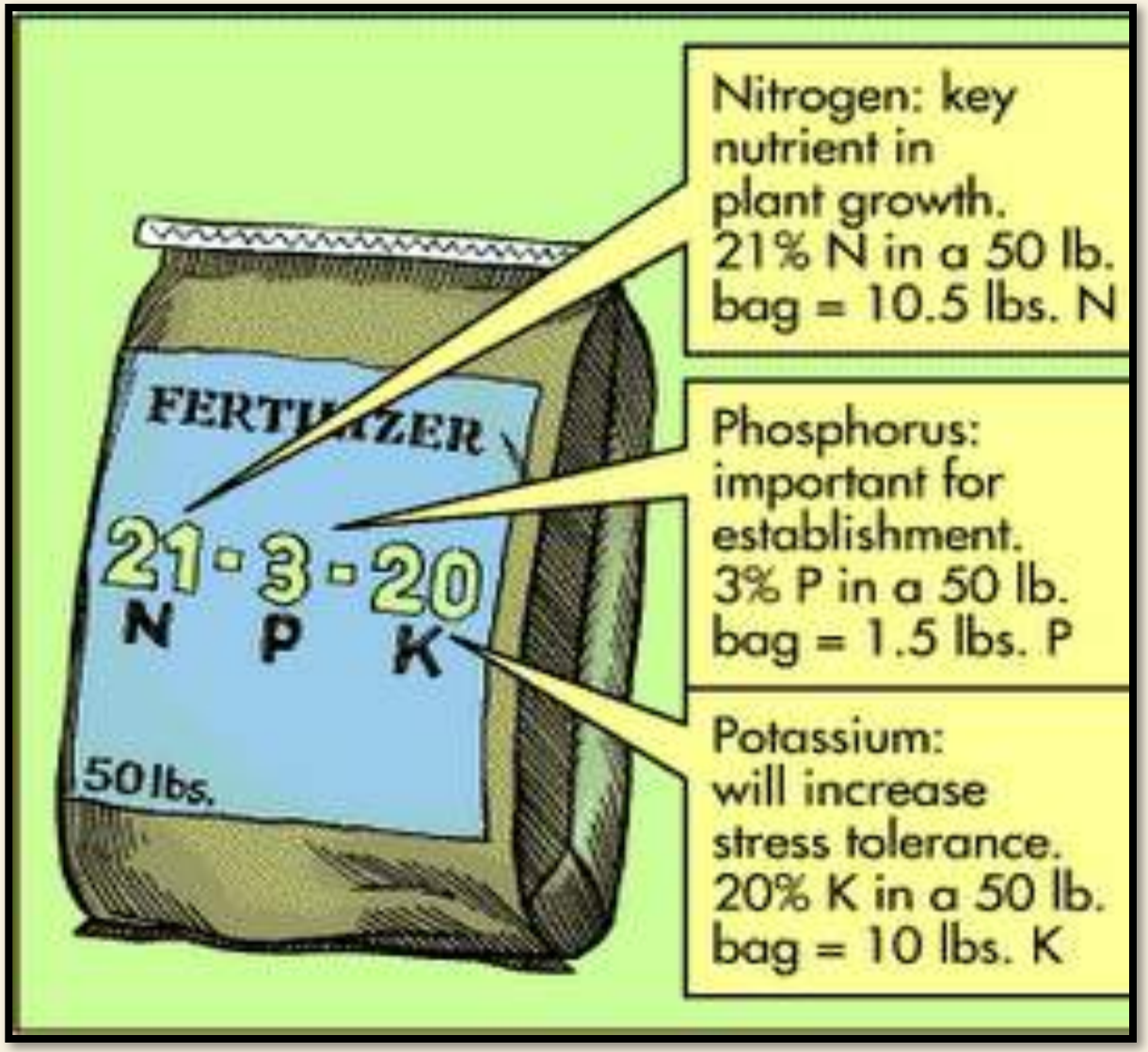
What is NPK and Why is it Important?

- Nitrogen (N) – nitrogen is largely responsible for the growth of leaves on the plant.
- Phosphorus (P) – Phosphorus is largely responsible for root growth and flower and fruit development.
- Potassium (K) – Potassium is a nutrient that helps the overall functions of the plant perform correctly.
- Knowing the NPK values of a fertilizer can help you select one that is appropriate for the type of plant you are growing



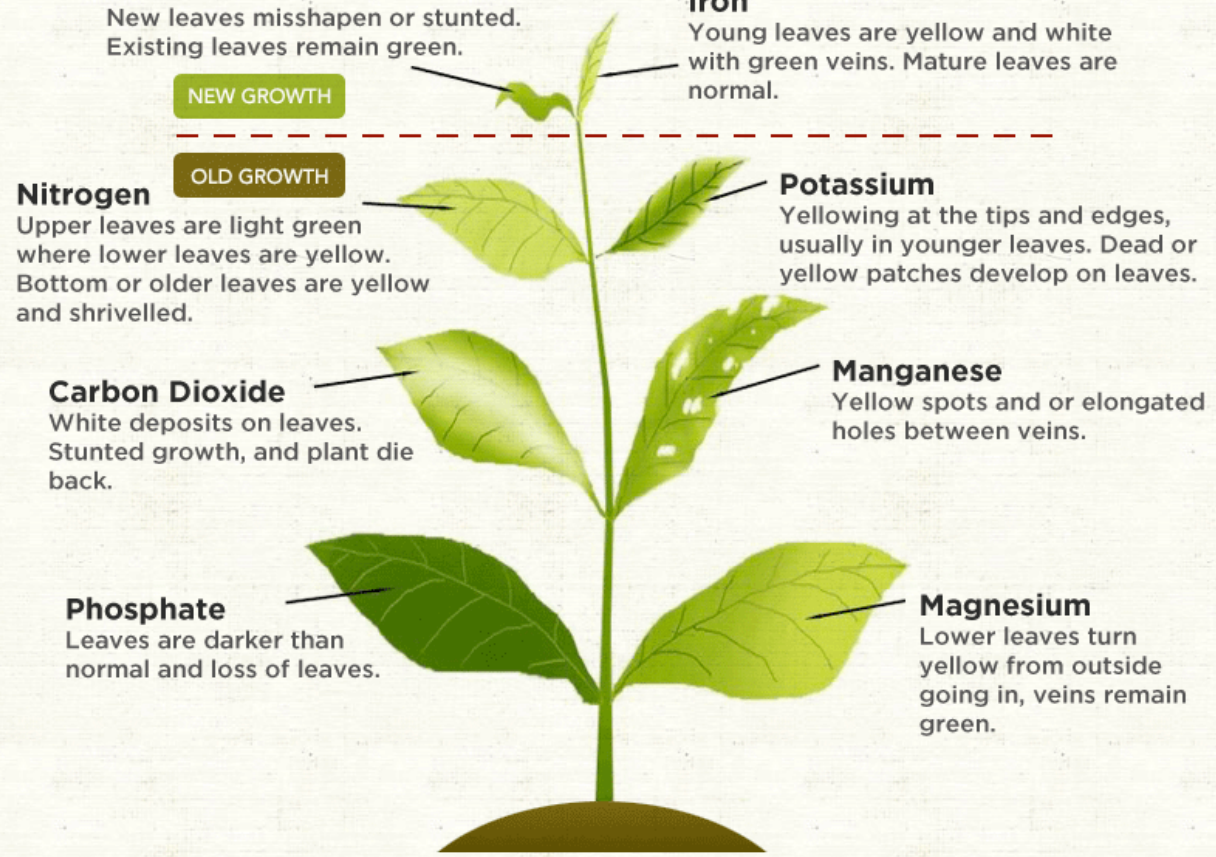
- For example:
  - ✓ **Leafy vegetables -** apply a fertilizer that has a higher nitrogen number to encourage leafy growth.
  - ✓ **Fruits and Flowers-** apply a fertilizer that has a higher phosphorus and potassium number to encourage more fruits and bl




FERTILIZER
21-3-20
N P K
50 lbs.
Nitrogen: key nutrient in plant growth. 21% N in a 50 lb. bag = 10.5 lbs. N
Phosphorus: important for establishment. 3% P in a 50 lb. bag = 1.5 lbs. P
Potassium: will increase stress tolerance. 20% K in a 50 lb. bag = 10 lbs. K

- Fertigation tackles the soil challenges that we are facing in Brunei
- Fertigation removes the hassle of fertilizer application
- Water soluble fertilizers are delivered directly into the roots following our specified set time

Simple PLANT DEFICIENCY Guide



Calcium
New leaves misshapen or stunted. Existing leaves remain green.

Iron
Young leaves are yellow and white with green veins. Mature leaves are normal.

Nitrogen
Upper leaves are light green where lower leaves are yellow. Bottom or older leaves are yellow and shrivelled.

Potassium
Yellowing at the tips and edges, usually in younger leaves. Dead or yellow patches develop on leaves.

Carbon Dioxide
White deposits on leaves. Stunted growth, and plant die back.

Manganese
Yellow spots and or elongated holes between veins.

Phosphate
Leaves are darker than normal and loss of leaves.

Magnesium
Lower leaves turn yellow from outside going in, veins remain green.

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NITROGEN DEFICIENCY SOLUTION

Composting With Coffee Grounds – Used Coffee Grounds For Gardening

Composting coffee grounds helps to add nitrogen to your compost pile. – Is acidic

Used coffee grounds for gardening does not end with compost. Many people choose to place coffee grounds straight onto the soil and use it as a fertilizer. The thing to keep in mind is while coffee grounds add nitrogen to your compost, they will not immediately add nitrogen to your soil.

Adding unused coffee grounds is ok however they are acidic so depending on the crop it may not be suitable as fertilizer.

POTASSIUM / PHOSPHORUS DEFICIENCY SOLUTION

Dried Banana Peels

Dried banana peels are 42 percent potassium, more than most other organic substances, such as manure at 0.5 percent, wood ash at 10 percent and cantaloupe rinds at 12 percent.

Banana peels are 3.25 percent phosphorus, one of the other major nutrients that plants need to grow.

Method

Use your oven on the lowest setting and leave the door ajar.

Or leave out in the sun until dry.

Apply directly in the soil.

How does fertigation tackle irrigation and fertilization's challenges?

Fertigation : Fertilizers are dissolved in water at a precise concentration and applied through irrigation water to supply directly in the root zone of plants

How?

- Convenience and flexibility (In timing of fertilizer application)
  - Semi-automated Watering and fertilization of plants by the use of timer

  - The fertigation device operates even when the owner is away

- Ensures maximum absorption of applied nutrients and water and reduces its loss (efficiency)
  - ➢ Fertilizers and water are supplied at precise concentrations

- Less energy and labour
  - ➢ Eliminate manual application of water and fertilizers

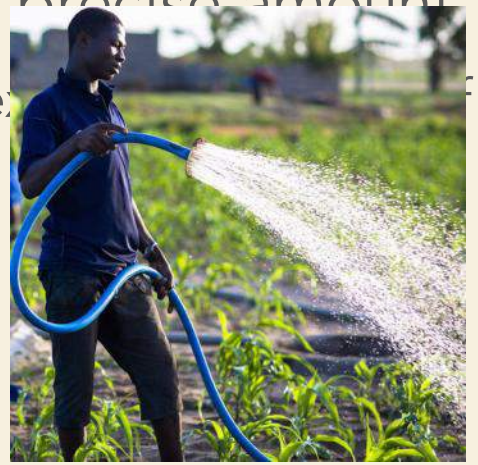
- Less diseases of plants
  - ➢ Diseases are often grow and spread when there is free water/ moisture

– Economically profitable
  - ➢ Less labour, Less diseases, Less water and fertilizer usage = less cost in the long run

Traditional farming method

Randomly scattering the fertilizers into the soil of a target plant

- Fertilizers are applied not in precise amount
  - Possibi nd e f fertilizers



- Irrigation using water hose producing excess water drainage
  - Less efficiency of nutrient and water absorption

- Manual application of fertilizers and irrigation
  - Labour intensive (especially in a large farm)

- You must be available according to watering and fertilizing schedule
  - Time consuming

- Some crops have imbalance yield rate
  - Different amount of water and fertilizers= different growth rate

- Economically more expensive
  - More diseases, more man power, time consuming, excess water and fertilizer = more costly